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Watching the Cat

For the past few months the general attitude of business has very much resembled the neighbor's cat that prowls and yowls in the night. It has been extremely disturbing—perched as it has been on the old back fence, shrilly meowing for its mate.

The trouble seems to have been with most of us that we have stood around watching the cat, and wondering which way the blamed thing was going to jump.

Business kept on with its caterwauling until we all were worked up to the highest pitch of emotion—but it did not jump. It simply maintained its exalted position on its lofty perch—and we stood by and watched it.

Many of us found more profitable things to do than watching this fool cat. Perhaps to some of us it did not make so much difference which way the cat jumped. Others were of the opinion that the cat would not jump—and it did not.

The man engaged in legitimate business, be he electrical contractor-dealer, peanut vendor, or diamond merchant, is usually too easily disturbed by the night songs of the business cat. He is prone to take these occasional wailings too seriously. When a slight disturbance arises he sits around and waits to see what business is going to do—he watches the cat.

There is another type of business man, however, who is not so readily annoyed. It is easy to find his place of business—it stands out like a twenty dollar gold piece in a palm full of rusty nickels. He has the busiest store in town. His customers are his friends—every one of them, through thick and thin. He advertises during dull times to get business and advertises during good times to keep business. He radiates optimism at all times. He gives no heed to the pessimistic howlings of his neighbors—he is not watching the cat.

At present this well balanced, far sighted, long headed merchant—of the diamond, peanut, or electrical species—is planning on what he is going to do when the old cat dies, or seeks the seclusion of the rag rug under the kitchen hearth. Always aiming to keep at least a step ahead of

others in his line of business, he is preparing for a selling campaign that will increase his business in the future.

There is no patent on the progressive business man's method—any electrical contractor-dealer can operate on the same principle without fear of a suit for infringement of rights.

But in order to accomplish results, he must busy himself with his own affairs, rather than with the general unrest of the entire world. He must not be so easily affected by strange noises—they sound louder than they really are in the stillness of the night. He must pay no attention to calamity howlers—they have nothing else to do. He should not be annoyed by what his customer says the other fellow is doing. He should make a friend of him. And when the business cat mounts the back yard fence, let him alone—he is sure to come down before the dawn.

Stop watching the cat!

Selling the Electric Idea

In the days that are not within the memory of the present generation, bathtubs were as rare as electric dwellings are today. When a member of the family returned from a visit to the big city and boasted of having occupied a bedroom with an adjoining bath, it caused everybody to sit up and wonder—perhaps dream that some sweet day he or she might be privileged to enjoy the same luxury.

In those days, running water in the home was also cause for wonderment, and even those who enjoyed the convenience of this innovation were perfectly content to fill the old brass kettle and heat the water over the kitchen stove in order to indulge in a hot bath—which they religiously partook of every Saturday night in the wooden bathtub, whether they needed it or not.

Kerosene lamps were also a luxury then, and the odor of coal oil, as it was called, smelled to heaven in every happy home of the land. But the oil filled lamp was an improvement over the tallow candle—and at this period both of these household conveniences were rapidly being snuffed out by the piping of illuminating gas into the homes. Would wonders never cease!

It was no time at all until the gas and kerosene era gave way to electricity for lighting. Here indeed was the wonder of wonders—and old timers still live who thought it was merely a slick trick, fit only for the amusement of the public—to catch their pennies.

Today the progressive householder demands a modern bathroom with running water—hot as well as cold. Even the smallest village now points with pride to its water works, also to its gas plant, and sometimes to its electric utility. Not that all communities would not be proud to have the latter within their borders, but the idea is comparatively new, for which reason it has not reached the crossroads communities to any great extent as yet.

But electricity is on its way in all its glory, and the present generation will live to see the day when householders will demand full electric equipment, as they now demand running water or gas. The home electric activities first started by the California Coöperative Campaign, are bearing fruit. Electric homes are being proposed in all sections of the country—and the proposal of an advanced step in the electrical industry is equivalent to its complete development and to its accomplishment in full.

Contractor-dealers are not lagging in their endeavors to sell the public on the electric idea. In their natural situations they are closer to the public than is any other branch of the electrical industry. But even they, like the utilities, are as yet looked upon with suspicion when they recommend a greater use for electricity than has yet been comprehended by the public.

It must be remembered that the contractor-dealer is the last one to be consulted when electrification is contemplated. After the architect has finished his work, the builder and the general contractor begin to figure how much they can cut the already sparsely recommended electric equipment. When the contractor-dealer takes the job it is too late to correct mistakes. If he does meet the owner and prescribe adequate wiring and its accompanying convenience outlets, he usually is turned down without even a chance to clearly present his case.

Of course the time will come when architects and builders will see the light. Electric home campaigns are bringing this about. The public sells itself on proper wiring and adequate outlets when it sees the electric home—and such a sale not only sticks, but it develops a new force of salesmen that cost nothing—those who urge their friends to enjoy the same comforts that they possess.

Then let us not overdo the thing at the start of this big selling campaign. Equip the average home to fit the present needs of the average family. The necessity for additional electric conveniences will eventually be felt. At no far distant day the public will have sold itself on the proposition, after which preliminary specifications must first include the full complement of electric equipment before the architect or builder has a hand in its development and completion.

Study the Situation

The electrical contractor is now wondering when the building industry will again begin to function. If he is an analyst he has been watching the price fluctuations of building materials in general and has compared those figures with the granting of building permits; then he has

studied the general trend of commercial affairs; the financial situation; agriculture reports; and the endless variety of legislation—local, state and national—that is designed to affect building interests.

Although it is said that figures do not lie, no two men seem to get the same answer to their problem when comparing figures on the present situation in the building industry. Yet, as pointed out in an article on this subject printed in these pages last month, the electrical contractor must look into the past records of matters relating to this subject if he wishes to obtain reliable information.

The article referred to graphically presents the case in charts that show an upward trend of normal requirements in building operations for the past fifteen years. The peaks and depressions are clearly defined for each year, and then the writer, taking the building permits for January and February of the present year as a basis, shows what may be the results during the balance of this year in the event of either a revival or a depression.

The charts accompanying the article, as well as the text itself, should be carefully studied by the electrical contractor, with a view to adopting the same process of figures to an application in his own locality. If it is shown that new building operations are not sufficiently active to attract him, then there is the home wiring campaign to fall back on and keep him busy.

Eventually building operations must get back to—and then go far beyond—a prewar basis. Just now the labor situation must be reckoned with before any definite steps can be taken. But necessity calls for housing—public as well as private—and when all the kinks have been straightened out of the line, a revival of the construction business is going to hold the electrical contractor's attention for a long time to come.

When will that be? Well, in the agricultural districts they say that all signs fail in dry weather. But there already has been such a long drought that official indications need no longer be consulted. We may content ourselves with the knowledge that a building revival is on the way—and that every new building will require wiring for electricity.

Attend the Convention

Next month in Buffalo, New York, there will be held the twenty-first convention of the National Association of Electrical Contractors and Dealers. The first meeting was held in that city twenty years ago, at which time the organization was founded.

On July 17, 1901, less than fifty electrical contractors joined together in an endeavor to formulate ideas and establish practices that not only would work for the benefit of themselves and their associates, but that would tend toward largely benefitting the entire industry. The organization progressed and succeeded in carrying out its specified purposes.

At this period—twenty years later—every contractor-dealer in this country enjoys the benefits resulting from the efforts of this National body. In fact the influences of the organization extend further than the boundaries of the United States, for in Canada most intensive activities have

been aroused in this branch of the industry, while in Mexico, in South and Central America, and perhaps in the remotest parts of the world, the influences of this first organized body of electrical contractors have had their good effects.

First, it was necessary to improve certain trade practices; then proper business ethics had to be established; it was found beneficial to treat with other branches of the industry; the time came when coöperation was seen to be of great benefit; and through the united action of the entire membership, these things could be accomplished.

Today, after careful studies and a most exhaustive research have been made of estimating, merchandising, financing, accounting, cost data, buying and selling, and numerous other subjects conveying the operation of an electrical contractor-dealer business, there is no man connected with this line of endeavor who does not receive his share of the benefits.

At the Anniversary Convention to be held in Buffalo next month, the accomplishments of the National Association will be observed at first hand. Both members and non-members can meet on common ground. There will be open meetings during the entire week. Those outside of the organization should grasp this opportunity of getting acquainted with other good fellows and place themselves in a position to make a study of the organization that has helped to bring the electrical industry into such enviable prominence.

Members of the National Association and those who have previously attended these annual conventions do not need to be told of the benefits to be derived from being present. But all should be urged to perfect their arrangements at an early date, for present indications point to an unusually large crowd at this Twentieth Anniversary Convention.

A Worthy Institution

Those who would have it believed that they do not approve of business organizations must receive cold comfort from reading the bulletins of the Chamber of Commerce of the United States.

This master association recently held its ninth annual meeting at Atlantic City, and a summary of the reports presented and endorsed at that time show the onward and upward tendency of general business practices; and more—when fostered by such an organization, it is clearly shown that law makers are quick to grasp the ideas and recommendations so offered.

The slogan of this last convention is worthy of the greatest publicity. It reads

IN THE PUBLIC INTEREST:

*More Business Methods in Government;
Less Government Management of Business.*

Does this require any explanation to make its meaning clear? Will any reader misunderstand it? Can it be supposed that any delegate attended that notable convention laboring under a misapprehension of its purposes?

Backing up its slogan, the Chamber further declares that it believes the relation of government toward industry and commerce is primarily that of preserving equality or opportunity for all—an equal chance to every citizen to win his

position in accordance with his character, ability and efforts. Individual initiative, strengthened by education, safeguarded by publicity, stimulated by active and free competition, is the guarantee of sound national progress. Laws and administrative acts should touch business enterprise with great care and only to preserve a fair field to all.

Another declaration of the meeting in discussion will have the hearty endorsement of business in general. It reads: "The foundation of all enterprise is primarily that of service to the community, and this service is most effective under private initiative. The community's valuation of that service and its reward for it are most fairly expressed when secured by individual initiative, under conditions of free competition. The value of and the reward for such service cannot be safely apportioned by the arbitrary decisions of government agencies."

National organizations of this nature are accomplishing wonderful results in bringing about harmony in the various industries; in familiarizing business with public interests; and in helping to solve the business problems of the world for the good of all.

Estimating Methods

It is with no little sense of satisfaction that we see the installation branch of the electrical industry so stirred up over the subject of estimating as it is at the present time.

To be sure, exactly this same situation has obtained in every trade where estimating is done, since the day the first detailed estimate was submitted.

This same old subject alone has been the cause of more disputes and arguments than has politics and religion put together. Estimating has made bitter enemies, brought together the fiercest foes, and has caused the rise and fall of many great and near great men.

Early last winter there was published in this magazine a series of articles on improving estimating methods. The author, A. L. Abbott of St. Paul, Minnesota, is chairman of the cost data committee of the National Executive Board. His articles were thoughtful, weighty, and carried conviction.

But as often happens when someone has a good thing, everybody else finds it opportune to look out of the window; and in this case it was months before enough interest was aroused to hold even a respectable post mortem—to which any hand is entitled that has not had a call.

Now there are tangible signs of reviving the subject and giving it a fair play. Last month's issue of this magazine contained several pages of what might be properly termed constructive criticism of Mr. Abbott's theories, and again this month a well known authority from the Electrical League of Cleveland does some helpful analyzing.

After all the old topic is not dead, which is a source of satisfaction, to say the least. Still greater interest should be aroused. As an enthusiastic official of the New York Electrical Estimators' Association said in these columns last month: "The success of your business depends upon your estimating methods."

Let us hear from others—either for or against the suggestions thus far made. These columns are open to such discussions at all times. Send in your contributions.

The Code at a Glance--Part II

A Tabulation of the Requirements of the National Electrical Code

BY HUBERT S. WYNKOOP, M. E.

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[Note—There was presented in last month's issue the first installment of Mr. Wynkoop's alphabetical tabulation of Code Requirements, which is being widely discussed and commented upon in the electrical industry. Readers will be better able to judge the merits of this plan with the release of this second installment. The third and last part will appear in the July number of this magazine. Those who are interested in this innovation are invited to express their opinions through these columns.—The Editor.]

XXVIII. FLASHERS

See Signs.

XXIX. FUSES

1. On central station switchboards approved fuses of other than N. E. C. standard may be used, if not of over 2 amperes capacity, for instruments and pilot lights.
2. Classification:

Not over 250 volts	{	0- 30 amperes. 31- 60 amperes. 61-100 amperes. 101-200 amperes. 201-400 amperes. 401-600 amperes.
Not over 600 volts	{	0- 30 amperes. 31- 60 amperes. 61-100 amperes. 101-200 amperes. 201-400 amperes.
3. Sizes and locations:
See Conductors.
4. Specifications.
See Code No. 68.

XXX. GARAGES

1. Wiring Methods

- a. Armored cable or conduit, if more than two cars can be stored.
- b. Metal raceway may be used in office and show room.
- c. Outlet and junction boxes, cut-outs, switches and receptacles, hatch limit switches of elevators: at least 4 feet above floor.

2. Fixtures

- a. Cord pendant: reinforced cord.

3. Portables

- a. For charging: Stage cables, with 50 ampere separable plug hung 4 feet above floor, the current-carrying parts shielded.

- b. For portable lamps, motors or other apparatus:

—Stage cable or packinghouse cord, with separable connector hung 4 feet above floor.

—Keyless socket, with handle, hook and substantial guard.

- c. Cutout and switch, if attached to portable apparatus, must be enclosed.

4. Generators and motors (not a part of a vehicle)

- a. Fully enclosed type, if not 4 feet above floor.
- b. If not of fully enclosed type and more than 4 feet above floor: wire screen of not less than No. 14 mesh over opening at commutator end.

5. Switch boards and charging panels

Carrying sparking devices: must be placed in a special inclosure, if the devices are not 4 feet above floor or in vapor proof inclosures.

XXXI. GENERATORS AND MOTORS

1. General

- a. Ground frames, when operating at more than 150 volts and accessible to other than duly qualified attendants.
- b. Insulate frames, when the voltage of the circuit exceeds 150 volts to ground [and the machines are accessible only to duly qualified attendants].
- c. Terminal blocks: Non-combustible, non-absorptive insulating material.
- d. Soft rubber bushings: Where not liable to be attacked by oil, grease, oily vapors, etc.; where such bushings would deteriorate rapidly, use filled hardwood, porcelain or mica.

2. Generators

- a. Location: Dry place; not in room where any hazardous process is carried on; not where exposed to inflammable gases or flyings of combustible material.

- b. Wooden base frames and wooden floors: Keep filled, clean and dry.

- c. Name plate: Maker's name, rating in K. W. for D. C., KVA for A. C., normal volts and amperes, revolutions per minute.

3. Motors

- a. Location: Only in central station, sub-station, generator room or motor room, if operating at over 2500 volts.
- b. Name plate: Maker's name, capacity in volts and amperes, "normal full load speed and the interval during which they can safely operate, starting cold." (Does not apply to railway motors.)
- c. Suitable drip pans, if permanently located on wooden floors.
- d. Reverse phase relay: for A. C. motors operating elevators or cranes.
- e. Not "in series-multiple or multiple or multiple-series, except on constant potential systems, and then only by special permission."
- f. "Adjustable speed motors, unless of special and appropriate design, if controlled by means of field regulation, must be so arranged and connected that they cannot be started under weakened field."
- g. "Motors having brushes or sliding contacts exposed to combustible dust must be placed in non-combustible rooms or inclosures, provided with ventilation to outside clean air." Under extreme conditions, such as commonly exist in flour mills, grain elevators and the like, squirrel cage type motors should be similarly inclosed."

XXXII. GROUND DETECTORS

"Each distribution system originating in a station under attendance must be provided with a reliable ground detector, unless permanently grounded."

XXXIII. GROUNDING**1. System Grounds**

- a. Permitted only when "under normal conditions of service there will be no appreciable passage of current over the ground conductor."
- b. 2-wire, D. C.: At one station only.
- c. 3-wire, D. C.: On neutral at two or more supply stations, but not at individual services or within buildings.
- d. Single phase, 2-wire: At each service (or near the transformer), on either conductor and at a convenient point giving lowest voltage to ground.
- e. Single phase, 3-wire: At each service (or near the transformer) on neutral.
- f. Two phase or three phase: As for single phase, 2-wire.
- g. One phase of 2-phase or 3-phase system used for lighting: ground this phase, and at neutral if there is one.
- h. Only one ground per secondary is permitted in one building.

2 Equipment Grounds

- a. Permitted only when "connections are so disposed and underground piping systems so inter-connected that there shall, under normal conditions, be no appreciable passage of current over the ground conductor."
- b. Service runs of any length and equipment runs not exceeding 25 feet in length need not be grounded if insulated from ground and from all metal work, and if "either isolated or guarded when within reach from grounded surfaces."
- c. Sections of equipment must be bonded together or grounded separately. (For exception, see preceding paragraph.)
- d. Point of attachment of ground conductor must be readily accessible, and as near as practicable to the source of supply of conductors contained in equipment.
- e. Equipment may not be used as part of a ground conductor for a service conduit.
- f. Ground conductor for equipment must not be connected to a conductor grounding a circuit.

- g. Grounded circuit conductor must not be used as ground conductor for equipment.

3. Ground Conductors

- a. Copper or other non-corrodible metal, run without splices, if practicable.
- b. For lightning arrester and ground detector: Runs to be as short and straight as practicable.
- c. "Protection for lightning arrester ground conductors must be of non-magnetic material unless the ground conductor is electrically connected to both ends of the protective device."
- d. Automatic cutouts: Not in ground conductors.
See Code Nos. 15 Ad and 15 Aj.
- e. Sizes: See Conductors.

4. Ground Connections

- a. To water piping system, if available, and preferably on street side of meter and shut-off cock; otherwise, place shunt around part of piping system liable to be physically disconnected.
- b. To gas piping system, only if water piping system is not available and then only for equipment ground. (Does not forbid the connecting of otherwise well grounded fixtures to gas piping at outlets). To avoid the running of a long ground conductor to water pipe, small fixtures may be grounded on gas pipe which is well bonded to water pipe at or near service point.
- c. At supply stations: "To all available, active, continuous, metallic underground water piping systems between which no appreciable difference of potential normally exists," otherwise, to one such system. Other grounds may be accepted.
- d. A system ground wire, paralleling the street main, is acceptable as a ground if it meets the requirements of Code Nos. 15 Ak and 15 At.
- e. "Artificial grounds should be located where practicable below permanent moisture level. Each ground must present not less than 4 square feet surface to exterior soil. Areas where ground water level is close to the surface should be used when available."
"Where ground plates are used they should be at least No. 16 Stubbs gage copper; when driven pipes are used

they should be of galvanized iron and not smaller than one inch internal diameter; and when cast iron plates are used they should be at least one-quarter inch in thickness."

—NOTE—No. 16 Stubbs gage is .175 in.

- f. "The ground connection to metallic piping systems must be made either: 1, by the use of an approved ground clamp bolted to the pipe after it has been freed from all rust and scale; 2, by screwing tightly into the pipe or a pipe fitting a brass plug having a lug for ground conductor, or by other equivalent means."
"The ground wire must be attached to the clamp or to the plug by means of solder or by an approved solderless connector."
- g. "The combined resistances of the ground wires and connections of any grounded circuit, equipment, or lightning arrester should not exceed 3 ohms for water pipe connections nor 25 ohms for artificial grounds where these must be used. Where, because of dry or other high resistance soils it is impracticable to obtain artificial ground resistance as low as 25 ohms, two such grounds 6 feet apart if practicable must be installed, and no requirement will be made as to resistance."
- h. Grounded conductors or rails of electric railway circuits must not be used as ground for other than electric railway lightning arresters or equipment, where other effective ground is available.
- i. Lightning arrester ground conductor must not be attached to an artificial ground used for system or equipment, but must be kept 20 feet distant.

XXXIV. HEATING APPLIANCES**1. General**

- a. Cutout for each complete appliance of more than 6 amperes or 660 watts.
- b. Not more than 6 amperes or 660 watts on a cutout, when grouped. (Sub-divided circuits of an appliance need not be separately fused.)
- c. Permitted on lighting circuit, if of not over 6 amperes rating "when the normal load on the circuit at any time will not exceed 660 watts."
- d. Indicating switch, located within sight and readily accessible, for each appliance or group of appliances not exceeding 6 amperes or 660 watts. For portables, this switch may take the form of a separable plug placed at any point of the cable, or a fixed plug and

receptacle, of not over 30 amperes rating. It must disconnect all wires. (Single pole switches on individual units of ranges do not take the place of this switch.)

- e. Name plate: Maker's name, and the normal capacity in volts and amperes, or volts and watts.

2. Portable

- a. Heater cord required, for irons and other appliances rated at over 250 watts.
b. Approved stands, for irons and other appliances intended to be applied to combustible material.

3. Stationary

- a. Locate to protect surrounding combustible material.
b. Conduit, if practicable; or guard open wiring from mechanical injury and moisture.
c. Insulation: Rubber, unless exposed to excessive heat, in which case use heat-resisting insulation.
d. Ground frame, unless special permission to omit is given.

XXXV. HIGH POTENTIAL SYSTEMS

1. Location: Central stations, sub-stations, generator and transformer rooms, and motor rooms adjoining an outside wall.
2. Voltage: 601 to 5,000 volts, constant potential.
3. Insulation: Rubber; or varnished cloth (in sizes of No. 6 and larger and in permanently dry places). If the wires are in conduit, a lead sheath must be added; but this sheath may be omitted by special permission, where not exposed to moisture; or the sheath may be omitted at the splices, in dry places, if the sheath ends are belled out and bonded around the splice by No. 6 and ground clamps.
4. Supports: As for open work in damp places (see Wiring Methods), except that wires of opposite polarity must be kept 8 inches apart.
5. Protection of cable ends: Provides bell mouth, pothead or similar device for end of sheath, to protect cable from moisture and mechanical injury.
6. Ground conduit and sheath, bonding them together.

7. Prohibition: No multiple-series or series-multiple system of lighting.

XXXVI. INCANDESCENT LAMPS

1. Gas Filled

- a. Not in show windows, nor where inflammable material is liable to come in contact with lamps, shades or reflectors, unless installed in ventilated and guarded fixtures.
- b. Not above 250 watts, medium base; nor above 1,500 watts, mogul base.
- c. Fixture wire: Within buildings, slow burning or other heat resisting covering, if subject to excessive heat; outdoors, rubber.

2. Mercury Vapor

- a. Cutout for each lamp or series of lamps; except that not more than 5 lamps contained in a single frame and lighted by one operation may be dependent upon one cutout.
- b. By special permission, 4,000 watts will be allowed on a circuit, if fixtures are wired with No. 12 and taps do not exceed 18 inches.

3. Vacuum Tubes

- a. Keep free from mechanical injury or liability to contact with inflammable material.
- b. Steel cabinet for high potential coils and regulating apparatus; well ventilated, guarded openings, grounded, thickness of metal at least 1/10 inch. Apparatus within to be mounted on slate.

XXXVII. INDUCTANCE COILS

See Resistances.

XXXVIII. ISOLATED PLANTS (For Less Than 50 Volts)

1. General

- a. Source of energy: Internal combustion engine, driving generator.
- b. "In the use of lighting equipments with operating voltages less than 50 volts special attention is needed regarding the size of all conductors (wires, cords, fittings and devices) to assure safe carrying capacities for the larger currents required to accomplish the results as compared with ordinary commercial circuits of higher voltages."

2. Sockets

- a. Medium base sockets, rated at 250 volts, 250 watts, may carry a maximum current of 3½ amperes.

3. Cutouts

- a. Not more than 320 watts (and not more than 8 lamp sockets or receptacles) per cutout. (Sockets and receptacles are rated at 40 watts each.)
- b. Fuses for branch lighting circuits: Not over 10 amperes.
- c. Heating appliances: Limiting wattage 320 instead of 660.

XXXIX. INSULATION RESISTANCE

"The complete installation must have a resistance between conductors and between all conductors and the ground (not including attachments, sockets, receptacles, etc.) not less than that given in the following table:

Up to	5 amperes	4,000,000 ohms
" "	10	2,000,000 "
" "	25	800,000 "
" "	50	400,000 "
" "	100	200,000 "
" "	200	100,000 "
" "	400	50,000 "
" "	800	25,000 "
" "	1,600	12,500 "

The test must be made with all cut-outs and safety devices in place. If the lamp sockets, receptacles, electroliers, etc., are also connected, only one-half of the resistance specified in the table will be required.

XL. KNOB AND TUBE WORK

See Wiring Methods.

XLI. LIGHTNING ARRESTERS

1. Location

- a. On each overhead wire entering station.
- b. In readily accessible place, and away from combustible material.
- c. As near as practicable to point of entrance.
- d. Isolated from other equipment; if oil-immersed, out of doors or in a fireproof compartment.

2. Ground Wires

- a. Avoid kinks, coils and sharp bends.
3. Insulation of arresters, choke coils and other attachments: equal to that of circuit wiring.

XLII. MARINE WORK

Omitted.

XLIII. METAL RACEWAY WORK

See Wiring Methods.

XLIV. MOTORS

See Generators and Motors.

XLV. MOVING PICTURE EQUIPMENT

1. Standard Machines, in booth

- a. Lamp houses: For specification, see Code No. 38 Ae.
- b. Rheostats are considered parts of the machines.
- c. Outlets: Feed by wire not smaller than No. 4.
- d. Extra films: Keep in individual metal boxes equipped with tight-fitting covers. "Reels containing films under examination or in process of rewinding must be enclosed in approved metal boxes similar to those required for films in operation, and not more than 2 feet of film shall be exposed in booth."
- e. Motor-driven Machines: Only by special permission.
- f. Booths: Required, even if slow burning films with standard width and perforations are used. Suitable fireproof material.

—Properly lighted.

—Large enough for operator to walk freely on either side of or back of machine.

—Vent pipe of permanent booth to have cross section of not less than 78 square inches, and to lead to outside of building or to a special non-combustible vent flue; vent pipe to be kept 1 inch from combustible material, or separated therefrom by non-combustible heat-insulating material at least $\frac{1}{2}$ inch thick.

—A fan exhausting 50 cubic feet of air per minute to be installed in such a way that gas and smoke being vented will not come in contact with motor, which must be connected to emergency service and not controlled from booth.

—Openings to have fireproof doors or shutters; doors "or covers" being normally held closed by spring hinges or their equivalent.

—Rewinding to be done in booth, if possible; otherwise, in a separate fireproof compartment.

g. Motor generator sets: If in booth, must have commutator ends "suitably protected against mechanical injury by wire screen or other suitable means."

2. Miniature Machines, no booth required

- a. Design must prevent use of standard (commercial) film, whether slow burning or otherwise.
- b. Switches and other control devices must form an integral part of machine.
- c. Equipment complete limited to 660 watts and special slow-burning film.
- d. Specifications: See Code No. 38 Af.

XLVI. MOVING PICTURE ESTABLISHMENTS

See Theatres.

XLVII. MOVING PICTURE EXCHANGES, FACTORIES, AND STUDIOS

1. Wiring Method

Metal raceway, armored cable or conduit.

2. Lamps

- a. Side wall: Enclosed receptacles, open-end wire guards riveted to covers of outlet boxes.
- b. Pendants: Reinforced cord, armored cable or armored cord; lamp guard.
- c. Portables: Keyless socket with handle, hook and guard; separable connector with female end connected to supply side and at least 1 foot above floor.
- d. Patching tables: Weatherproof keyless sockets suitably protected from mechanical injury.
- e. Storage vaults: Vapor proof globes, rigid fixtures; controlled by double pole switch outside vault; no portable lamps or fan motors in vault.

3. Motors

- a. Fully enclosed type.

4. Rheostats

- a. In metal cabinets, and externally operated.

XLVII. OPEN WIRING

See Wiring Methods.

XLIX. ORGANS

1. Supply

- a. Generator of not over 15 volts; or a primary battery.
- b. Insulate generator from ground and from driving motor; or ground frames of generator and motor.

2. Cables for Control

- a. Rubber, cotton or silk insulation.
- b. Bunch or cable all wires (ex-

cept common return and wires within organ), and cover by one or more braids.

- c. Outer covering of cable must be flameproof, if not run in conduit, or consist of a closely wound fireproof tape.
- d. Common return wire not to be included in cable, but may be laid in contact with it or placed under an additional covering enclosing both cable and return.
- e. Return wire: Rubber covered or slow burning, not smaller than No. 14.

3. Fuses

- a. "Circuits must be so subdivided and protected at the generator by approved enclosed fuses of not over 30 amperes capacity that every wire will be protected by one or more such fuses. No other fuses in the organ circuit will be required."

L. OUTLETS

1. General

- a. A box, cabinet, plate, fixture block, rosette or other fitting must be placed at each outlet, except

—Where, in the wiring of old buildings, special permission is given for its omission (in which case other means must be provided for securing the cable or conduit in place); or

—Where, in knob-and-tube work the flexible tubing is carried in a continuous length from the last point of support to a point 1 inch clear of the surface, or to a point at least flush with the gas cap, insulating joint or hickey.

- b. Surfaces broken for the introduction of box or cabinet must be restored.

- c. Unused holes must be closed.

- d. If a gas pipe is present, the box or other fitting must be mechanically and electrically secured to it.

- e. Switch and outlet boxes must not be supported by conduit unless the latter is entirely exposed and is threaded into box.

- f. Boxes or flush cabinets must be so set that the front edge will be not more than $\frac{1}{4}$ inch back of the finished surface of plaster on wooden lath, and

- must be flush with or extended from wooden surfaces.
- g. For surface extensions from existing outlets in concealed armored cable or conduit work, an extension ring or blank cover must be mounted on the original outlet box, and from this ring or cover the extension may be made in accordance with the requirements for the wiring method to be employed in making the extension.

- h. Floor outlets must be equipped with special boxes, unless the absence of mechanical injury or moisture warrants the granting of special permission to use a standard box.

2. Boxes: Outlet, Junction and Flush Switch

- a. At each outlet of metal raceway, armored cable or conduit work; recommended for knob-and-tube work.
- b. Must be covered by plate or canopy when job is completed.
- c. Junction boxes must be accessible. (This does not apply to the fitting placed where change is made from conduit or armored cable work to Knob-and-tube work, if there are no splices in the fitting.)
- d. Specifications: See Code No. 59.

3. Plates

- a. Only where it is impracticable to employ a box.

4. Cabinets and Cutout Boxes

- a. Of metal, when used with metal raceway, armored cable or conduit, except for cars and car houses.
- b. Weatherproof, for outdoor use.
- c. Wood or composition must be at least $\frac{3}{4}$ inch thick.
- d. Wooden cabinets must be lined with $\frac{1}{8}$ inch rigid asbestos board or $\frac{1}{4}$ inch slate, marble or composition. Wood must be well seasoned, filled and painted.
- e. Provide gutter for box containing more than 4 circuits, unless wires leave directly opposite their terminal connections.
- f. Spacings: $\frac{1}{16}$ inch between base of device and metal back of cabinet or box.

—1 inch between live metal part and unlined metal door; un-

less the latter is of No. 12 U. S. gage, (.109 in.) or thicker, in which case the clearance may be reduced to $\frac{1}{2}$ inch.

—2 inches between link fuses and metal or glass.

—Except as specified above, $\frac{1}{2}$ inch between live part and metal for voltages up to 250, and 1 inch for higher voltages.

—“Cabinets and cutout boxes must be deep enough to allow the doors to be closed when 30 ampere branch circuit panel board switches having spool or composition handles or when switches of combination cutouts are in any position and when other single-throw switches are thrown open as far as their construction and installation will permit.”

—For further specifications, see Code No. 70.

LI. OUTLINE LIGHTING

1. Voltage

- a. Not over 600.

2. Wiring Methods

- a. Open work, conduit work or metal trough.
- b. “Where flexible tubing is required, the ends must be sealed and painted with moisture repellent and kept at least $\frac{1}{2}$ inch from surface wired over.”
- c. “Where armored cable is used, the conductors must be protected from moisture by lead sheath between armor and insulation.”
- d. “In those parts of circuits where wires are connected to approved receptacles which hold them at least 1 inch from surface wired over, and which are placed not more than 1 foot apart, such receptacles will be considered to afford the necessary support and spacing of the wires. Between receptacles more than 1 foot, but not more than 2 feet, apart, an additional non-combustible, non-absorptive insulator maintaining a separation and spacing equivalent to the receptacle must be used.”

3. Sockets and Receptacles

- a. Keyless, porcelain; wires soldered to lugs.
- b. No miniature sockets out of doors.

4. Cutouts and Switches

- a. On a separate circuit, of not over 1,320 watts.
- b. Controlled by its own double pole switch.

5. Grounding

- a. Ground armored cable, conduit or metal trough.

6. Specifications for Trough

See Signs, and Code Nos. 38d and 83.

LII. OUTSIDE WORK

1. Pole lines: Omitted.
2. On buildings: See Services.

LIII. PANEL BOARDS

1. “When there are exposed live metal parts on the back of board, a space of at least $\frac{1}{2}$ inch must be provided between such live metal parts and the cabinet in which the board is mounted.”
2. Spacings.
- a. See Outlets—Cabinets.
- b. See Switchboards.
- c. For specifications, see Code No. 69.

LIV. POLE LINES

Omitted.

LV. PORTABLES

1. Cables or Cords

- a. Distinctive marker required.
- b. No conductor smaller than No. 18.
- c. Insulation: Nos. 18 and 16, $\frac{1}{32}$ inch, rubber. Nos. 14 to 8, $\frac{3}{64}$ inch, rubber.
- d. Specifications: See Code No. 51.

2. Types of Cables or Cords

- a. C: for general use as pendants in dry places, or as portables where not exposed to hard usage.
- b. CB and CC: to hang freely in air.
- c. PD (conductors twisted) and PO (conductors parallel): for use only in offices, dwellings and similar places where not liable to hard usage.
- d. T: not more than 3 conductors, each not exceeding No. 4, twisted together and with a filler; insulation on each conductor of No. 6 to No. 4 to be $\frac{1}{16}$ inch thick.
- e. E: not less than No. 14 for lighting; not less than No. 16 for control.
- f. H: for all smoothing and sad irons, and for all other heating devices requiring over 250

watts; covering must consist of a layer of rubber or other approved material, a braided covering of asbestos and an outer braid enclosing either all the conductors as a whole or each conductor separately.

3. Nomenclature

Use	Type	Trade Name	Braid on Each Conductor	Reinforcement or Filler	Outer Cover
As Pendants or Portables in Dry Places					
Where not Subject to Hard Usage	C PD PO	Lamp Cord Twisted Portable Parallel Cord	Cotton or Silk " " " " " "		Cotton or Silk " " "
For Hard Usage	P CA PA	Reinforced Cord Armored Cord Armor Reinf. Cord	Cotton or Silk " " " " " "	Rubber Jacket Rubber Jacket	Cotton or Silk Armor Cotton and Armor
Pendants Damp Places	CB CC	Brewery Cord Canvasite Cord	Cotton Wp. " " "		Cotton Wp.
Portable Damp Places	PWp PkWp PAWp	Reinforced Cord Wp. Packinghouse Cord Armored Reinf. Cord Wp.	Cotton " " "	Rubber Jacket Filler Rubber Jacket	Cotton Wp. 2 Cotton both Wp. Cotton Wp. and Armor
Theater Stages	T	Stage Cable	Cotton Wp.	Filler	2 Cotton both Wp.
Theatre Borders	B	Border Light Cable	Cotton Wp.		2 Cotton both Wp.
Elevator Lighting and Control	E	Elevator Cable	Cotton	Rubber Jacket and or	1 or more Cotton both Wp. 3 Cotton, outer one Wp.

LVI. RADIO

"Note—These rules do not apply to Radio Signaling apparatus installed on ship-board.

In setting up Radio Signaling apparatus all wiring pertaining thereto must conform to the General Requirements of this Code for the class of work installed and the following additional specifications:

a. Aerial conductors must be installed and constructed to prevent accidental contact with conductors carrying a current of over 600 volts. Aerial supports must be constructed and installed in a strong and durable manner. Aerial conductors and wires leading from same to ground switch must be mounted firmly on approved insulating supports which may consist of wood (not iron) pins or brackets equipped with porcelain knobs of approved design or petticoat insulators. Insulators must be so installed as to maintain the conductors at least five (5) inches clear of the surface of the building wall. In passing the aerial conductor through the side of the building a continuous tube or bushing must be used. The bushing or tube must be composed of approved insulating material and must extend five (5) inches beyond the surface of the wall on both sides. Porcelain tubes will not be approved. The ground switch shall be mounted so that its current carrying parts will be at least five (5) inches clear of the building wall and located preferably in the most direct line between the aerial and the point of ground connection. The conductor from ground switch to ground connection must be securely supported.

b. Aerial conductors must be effectively and permanently grounded at all times when station is not in operation, by a conductor, the periphery of the cross-section of which is not less than three-quarters of an inch. The ground conductor must be of copper or other metal which will not corrode excessively under existing conditions. Where ground conductor is over twenty-five (25) feet in length, it shall be insulated through its entire length as provided in Section (a) for wires attached to aerial conductors. Ground connections should be made in accordance with the requirements of 15A, sections o to t inclusive, except where variation from these requirements may be allowed by special permission in writing.

c. In radio stations used for receiving only, the grounding switch may be replaced by a similarly mounted and grounded short-gap (1/8 inch or less) or vacuum type lightning arrester. The current carrying parts of devices must be kept five (5) inches clear of the building wall.

d. Where the aerial is grounded as specified in Sections a and b the switch employed to join the aerial to the ground connection shall be a knife switch of approved

design, the blade of which must have a periphery of not less than three-quarters (3/4) of an inch and when open the current carrying parts to which the aerial and ground connection wire are attached will be separated at least five (5) inches. The base of the switch must be of a material suitable for high frequency service. Slate will not be approved.

e. When supply is obtained direct from street service the circuit must be installed in approved metal conduit or armored cable. In order to protect the supply system from high potential surges there must be provided two condensers (each of not less than one-half microfarad capacity and capable of withstanding 600 volts test) in series across the line with midpoint grounded. A fuse not larger than ten amperes capacity shall be connected between each condenser and the line wire connected thereto. Each condenser shall preferably be protected by a shunting fixed spark-gap of 1/32 inch separation, or less. The supply system may also be protected from high potential surges by means of two incandescent lamps connected in series across the line with the midpoint grounded.

f. Transformers, voltage reducers, keys and similar devices shall be of types specifically designed for the service.

Electricity in the Arctic

The Midnight Sun has outlived its usefulness. Up in the dark cold regions of the Northland, where the natives formerly were content to group around in the darkness, twenty to twenty-two hours daily during the months of November, December and January, today the aurora borealis is not a whit more wonderful to the Eskimos and their youngsters than the welcome radiance of electric light.

It will be many a year before the public utility companies invade the realm of the totem pole, the glacier and the igloo; but in the meantime, the farm plant, that contrivance of storage

batteries and the like, which has been supplying the farmers of the rural West and Canada with power and light during recent years has begun to make its appearance.

One of the pioneer lighting outfits of the Arctic area was installed recently at the Kodiak Baptist Mission on Kodiak Island, just to the south of Cook Inlet, Alaska. C. D. Longmuir, a power and light expert of the Western Electric Company, played the solar role, introducing the apparatus that is now giving twenty four hours of real light each day to the hundreds of Aleutian children who are being taught and cared for at the home and industrial school of the Women's American Baptist Home Mission Society.

Electric Heating and Ventilating Shows

Two exhibits of great industrial importance are to be held in the Irving Place Showroom of The New York Edison Company in June. The first will be devoted to electric heating and will be given during the week of June 6-11. For the week beginning June 20, a demonstration of electrically operated ventilating equipment is scheduled.

Practically all of the electrical appliances for industrial and domestic heating which have been perfected during the past five or ten years will be exhibited. Forty-one manufacturers will take part and at least one hundred different applications of electric heat will be shown.

The ventilating display will include air conditioning equipment such as humidifiers and apparatus for temperature control, and various types of fans for home, office, and factory. The importance of ventilation and temperature control is now recognized as having an important bearing on production, and is receiving careful study by industrial managers. A conference of industrial and ventilating engineers will probably be held during the week. Each show will continue one week and will be free to the public.

Adequate Outlets Ads

Ralph Neumuller, advertising manager of the United Electric Light and Power Company, New York City, has sent out reprints of newspaper advertisements recently released through the local press. They are designed to stimulate house wiring and create a desire for more outlets throughout the home.

The Elusiveness of the Potential Customer

By C. L. KETCHAM

Advice to Sales People of Contractor-Dealer Stores,
Based on Personal Observations and Experience

There are many people who enter a store with a distinct idea in their minds that they are going to buy. They may have been in before, but they have also been to other stores and have decided that this particular store is the best of the lot.

This kind of customer, once persuaded to buy, may and often does become a permanent customer. No matter what she wants in the line of electrical devices, and no matter how many stores selling such articles there may be in the neighborhood, she goes to the same store, partly from force of habit and partly because she has convinced herself it is a good store and sees no reason for dividing her custom and perhaps getting stung.

Naturally when such a potential customer enters the store it is nothing short of criminal to allow her to leave without buying. Some clerks can tell when a customer enters their store with buying intentions, not merely to look things over because she has nothing else to do. They have a sort of sixth sense in this regard and redouble their efforts to sell that customer.

Also the clerk has been lectured to and trained and consulted with until it seems almost too bad to blame him for losing prospective customers, but some clerks do not realize that they have driven such customers away and would be amazed if told that such little things could have such an effect.

A Case in Point

For instance, I went into one store and while the clerk was waiting on me another clerk asked if there was anything I wanted. I replied swiftly: "Some one is getting something for me." Now that is difficult to say fast distinctly. Needless to say the clerk didn't know whether I was talking English to her or not. She concentrated and screwed her face up into an intense scowl, and yelled "What?" in a tone which said plainly: "I'm trying hard, but please talk plain if you can." I answered a little differently and was merely amused by the incident, but just the same it would have driven a person with any slight defect in her speech, and there are many such, out of the store at once. Or if she had stayed for her pur-

chase she would have left with an unpleasant sensation.

Another clerk solved a similar problem differently. A man was trying to tell her something he wanted and because of big projecting teeth he could not talk very clearly and she was having trouble understanding him. Matters were getting worse when she told him gently: "Won't you tell me again? I can't hear very well." The result was wonderful. The customer beamed on her and said: "Oh I didn't know that. I thought I was not talking distinctly." He thereupon began telling her all over again far more clearly than before just because he was no longer so self-conscious.

The clerk had no idea of claiming to be deaf but she was getting over a cold and thought it must be her fault for not understanding him. In the future she tried the same scheme with customers she encountered who had some speech defect, and even when the customer was aware of the fact that it was her fault too, fellow sympathy made her willing to go over the ground again. This clerk insisted there was no deception in it. "I certainly couldn't hear very well," was her comment, "and I sold them anyway."

Confused Customers

On another occasion I was waiting for my package when a woman came in and asked for a certain kind of electric toaster. When told the price she became hesitant, stammered a little, said a few uncertain sentences and walked out. I was myself buying a toaster and knew she had come in supposing the sale on toasters was still on. I thought so too, but had to buy a toaster anyway. This customer didn't have the courage to give her real reason for not buying and so cut a rather poor figure as she well knew.

The clerk who had tried to wait on her raised her eyebrows in a "nobody home" style and a fellow clerk smiled in response. There was a "did you ever see such a nut?" expression flashed back and forth between them. Not a word was said, and of course the woman who was the cause of it was safe out of the store, but other customers besides myself caught the look. Prob-

ably the other customers did not guess the reason as I had. In any event the contemptuous exchange of glances could not but have made a poor impression and would have affected a sensitive customer out of all proportion to the original intention.

No customer likes to think that she may cause such glances. Also the two clerks probably had no idea they were looking their thoughts so clearly. In fact it is dangerous for a clerk to form an opinion of her customer at all unless it is a very good one, for in spite of her that opinion will show in her eyes, if not on her whole face, and most customers are quick in reading faces, the sensitive ones in particular.

The same rule applies if the customer makes disparaging or ignorant remarks about the article shown her. She may say a toaster is old style when it is really the most up-to-date one out, but it does no good for the clerk to try to convince her to the contrary. If he lets her opinion go and calmly shows her another kind of toaster, she is far more apt to buy than if he started an argument. She may honestly have thought the toaster to be exactly like that of a friend. She may merely have wished to show that she knew something about toasters. And even if the clerk ignores her comments he must not show in his face what he thinks about her.

After all, what the clerk wants to do is to make a sale, not form personal opinions about his customers, and customers buying electrical appliances are sure to be more self conscious in such a store than in a candy store or variety store, just because they know so little about everything pertaining to electricity.

Gaining Good Will

Be interested in whatever your customer is telling you. Learn to listen with one ear trained on what the customer is saying, and the other seeking for an "opening" which will permit you to turn the customer's words to account. Use the customer's words as a means of pushing your wares. Interest in the small, everyday affairs of their lives will prove a big aid in gaining their good will and the patronage of their friends.

How to Help the Housewife With Her Electric Washer

BY M. J. ALMSTEAD

One of the Forty-nine Contractors Who Formed The National Association at Buffalo in 1901 Now Gives Valuable Information and Advice to Contractor-Dealers

Perhaps the most confusing question to the average housewife today, in selecting her electric servants, is: "Which washing machine shall I purchase?" "Which washing machine shall I sell my customers?" is not only the most confusing, but certainly the most important question for the electric dealer.

First, the dealer must consider the future upkeep and repairs on the machine if he wishes to hold the confidence of his trade and retain any of his profits. He must also have some idea of the different methods employed by all machines in the washing process.

I believe the following definition to be complete: Washing is simply a chemical action which dissolves and removes stains and soil from the material we use and wear. This action is brought about by some method of agitation, which is all that is furnished by any washing machine. The most efficient method must necessarily be that which gives the greatest agitation of the chemicals used, with the least wear on the materials cleansed. The most efficient chemicals are those that give the greatest cleansing result with the least injury to the fabric in removing the stain or soil.

Let us first consider the two chemicals generally used in the washing of clothes—water and soap. I believe great results will be accomplished in the near future by the extra attention which is being given to the condition of the water used. The laundryman today does not attempt to run a laundry without putting in the necessary material to reduce the water to the zero condition. It would be impossible for him to make any money in his profession were he to use the water as the ordinary housewife is using it. For example, in the State of Michigan, an article recently published informs us that the State chemist decided in this one state they were wasting over \$2,897,077.50 worth of soap each year by using hard water without softening it. Another interesting article by a young engineer, written about the conditions as they exist in New York City, treating on their new supply of water which they receive from the Cats-

kills, tells us very clearly how water not only affects the washing of clothes, but even the complexion of the skin and the condition of the hair.

Water Should Be Soft

Rain water is of course nearer the zero point than any other water; but as water is so solvent, it quickly takes on the impurities even from the air with which it comes in contact, and more quickly as it comes in contact with the earth. We designate the impure water as "hard" and also use the terms, "permanent" and "temporary" hardness. In the ordinary home there would be a great reduction in the amount of soap consumed if water were boiled and the steam allowed to escape, thus getting rid of the temporary hardness of the water. This temporary hardness varies necessarily with different seasons of the year. The permanent hardness which cannot be boiled or steamed out, and which varies greatly in different localities according to the condition of the soil with which it comes in contact, can be greatly reduced in its action on the soap, by using the necessary alkalis to render it inactive before putting the soap in the water. This permanent hardness, if not treated before the soap is subjected to the water, combines with the oil and grease in the soap and forms the objectionable white curd soap. This is next to impossible to entirely remove from the fabric being cleansed, and tends to throw the clothes off color when subjected to the hot iron.

Just a word regarding the old disputed subject of soaking clothes before washing them. So many confusing and contradictory articles have been written in different magazines, some stating that great results can be obtained by soaking clothes overnight before washing; others of equal authority advising not to soak the clothes overnight. The truth of the whole matter is this: If you have zero or soft water in which to soak your clothes, great results may be obtained. If you have either permanent or temporary hardness in the water, you simply retard the action of the washing operation by soaking the clothes, as this

hardness of the water gets thoroughly set in the fiber of the cloth, and in the washing operation it combines with the grease and oil in the soap. This retards rather than benefits the operation.

Soap is Great Problem

Soap is the next chemical to be considered. The problem of the soap manufacturer is to produce a soap manufactured by the use of the milder alkalis which will not injure the material, instead of using the old fashioned alkalis such as soda ash and potash which were formerly used. It is better to use extra applications of your chemicals than to use chemicals which act injuriously on the fiber or the color of the material cleansed. So much depends upon the condition of the water, the material cleansed, and the condition of the soil, that it is impossible to go beyond a certain point in advising anyone what soap, and how much of it to use in a washing machine. It is almost as dangerous to advise a woman on this subject as it is to advise her regarding material to use in baking. Many women use a recipe in baking which proves to be a failure. However, another housewife may use the very same recipe and produce results which we pronounce delicious. This same theory applies to the soap and other chemicals used. If not properly used, they will produce more harm than good.

There are two classes of soap—one—made from vegetable oils and compounds—usually used at a low temperature for washing woolens and silks; if used at a high temperature, the globules are not strong enough to retain the soil. The other soap is made from animal fats and greases, and is stronger. It will stand the high temperatures, and is usually used for cotton and linen materials. Much depends upon the care taken in manufacturing soap, and upon the material used. It has been decided by extensive chemical tests that the usual animal soap gives most efficient results when the water is from 150 to 170 degrees in temperature, although good soap will withstand a temperature of from 200 to 212 degrees.

Generally speaking, it is better to advise the housewife to use dry soap chips as the laundrymen do, and extra alkalis according to the condition of the water. Very seldom do we find the water in such condition that the dry chips can be used without the extra alkalis. Soap chips are usually about eighty to ninety percent pure soap, while the ordinary bar soap usually contains from eight to twelve percent pure soap. The remainder of the bar is composed of alkalis and fillers intended to act upon the hardness in the water. This hardness must be rendered inactive before the soap comes to a suds. Enough alkalis must then remain to start the first process of the washing, which is to saponify such oils and grease as will saponify with the alkalis.

Housewife Should Be Told

Here is something the ordinary housewife does not clearly understand: The oil and poison thrown off through the pores of the skin, sometimes termed an albuminous, oily substance, and which acts as a binder to the real soil in the cloth, must be saponified or chemically dissolved with the alkalis before the soap suds can enclose the other oils and grease and the water can take on dirt or soil. So many housewives think that this soil can be rubbed or washed out. Consequently they give this soil extra attention after the washing operation when in reality the soil should be chemically treated before washing, either with extra soap containing strong alkalis, or with strong alkalis in the water. Soil does not settle in the fiber of the cloth, but in the weave. Soap lubricates this soil, while the water flushes it out.

Some stains in clothing are affected by cold water and others by hot water. For example, we have two kinds of blood in our system, venous and arterial. Hot water tends to set the one, and cold water tends to set the other. In treating stains other than the regular soil which is treated by soap and water, take a lesson from the soap manufacturer. Do not use chemicals which in reducing the stains injure the color of the cloth or the fabric itself. Rather treat the goods with a number of applications and use milder chemicals.

As a suggestion, I believe the simplest and most efficient way to start a washing is, first of all, to bring the water as near as possible to the zero point either by boiling or with extra alkalis, and put the water in the machine together with the soap to be used. Never boil the soap

and thus reduce its strength. All its strength is necessary in the washing operation. No soap or alkalis manufacturer has ever given directions to boil soap, and it has been definitely determined by those of authority that twenty percent of the strength is reduced by the boiling operation. Put the soap directly in the machine, run the machine until every atom of water is lubricated and all the soap that will emulsify, or come to a suds, has been brought to this condition. Any machine which does not produce sufficient agitation to dissolve and bring soap to a suds cannot wash clothes.

Put the clothes in lukewarm water and wring them into the machine. Clothes that are not steamed during the washing operation should be boiled, steamed, or rinsed in boiling water after the washing operation in order to dissolve any suggestion of undissolved soap in the material before they are subjected to the last rinse of a light bluing. It is generally admitted that clothes should not be boiled with the soil in them. The principal object in boiling them after the soil has been removed is to steam out and dissolve all soap before the final step of bluing.

Clothes should not be wrung too dry from the last rinse as the moisture oxidized by the air is what tends to whiten them. This is why clothes left out overnight in the dew and oxidized by the air are whiter; and clothes, as we all know, which are bleached in Ireland are bleached better than in any other section of the world. This is on account of the atmospheric condition peculiar to that country.

Learn to Use Proper Chemicals

It is absolutely nonsense for any housewife to try any machine to see if it washes. She might just as well try a stove to see if it bakes. Her stove will bake if she mixes her chemicals right and the temperature of the oven is correct. Any washer will wash if the chemicals are properly mixed and of the correct temperature for the soil being displaced.

The points for the housewife to decide are: First, which machine produces greatest agitation with the least injury to clothing; second, which machine is the most sanitary and easiest to clean; third, which machine is the safest to operate with respect both to operator and to clothes; and fourth, the mechanism of the machine with regard to its wear and upkeep.

It is always the safest way for the

dealer to explain to the housewife the method employed in the machine he is endeavoring to sell. Do not be fooled, or try to mislead your customer by quoting some of the misleading statements furnished by some manufacturers in their circulars. Remember, you are taking long chances. Perhaps your customer has been educated by your competitor. It is safer to give your competitor and your customer credit for ordinary intelligence. Most people understand the limitations of mechanical contrivances.

In treating the above subject, it should be realized that a whole article could be written on anyone of these subjects; but the writer has endeavored to condense as far as possible, and simply give an idea of how important it is that the dealer should know something of the chemistry of washing. When a customer tests a machine to see if it washes, she should be brought to realize that she might better be tested to see if she knows what she is doing when she mixes the chemicals. For this mixture must be just as carefully balanced as the ingredients used in baking.

Remember our strongest competitor is the laundry. They sell nothing but service. We are selling merchandise and service. The more knowledge you have to put into your service, the more you increase the value of the article you are selling.

Electrical Man Heads T. P. A.

The followers of electricity carried off the lion's share of the offices at the annual election of the Technical Publicity Association of New York City.

W. A. Wolff of the Western Electric Company was elected president. Cyril Nast of the New York Edison Company was made second vice president; and O. M. Bostwick of the Sprague Electric Works was elected to the secretary's berth. The other new officers are G. W. Vos, Texas Company, first vice president; and R. P. Kehoe, treasurer. The executive committee consists of H. J. Downes, American Locomotive Company; W. B. Rufe of Jenkins Brothers; W. E. Kennedy, Simmons-Boardman Company and Chas. F. Baur of Iron Age.

Mr. Wolff, the new executive, was first vice president of the organization last year. He has been a member of the staff of the Western Electric Company's advertising department for several years, in charge of service and production.

Selling the Workman His Job

By V. D. GREEN

Director of Publicity for the National Council of Lighting
Fixture Manufacturers Sees Important Work to be Done

We have heard a great deal lately about the necessity of putting "pep" into our salesmen. Much has been said about the methods to be employed in making them feel that they and the house for which they work are part of the same organization. Many valuable ideas have been brought to light—many more still remain to be discovered.

But after all, our salesmen—important though they are—form as a rule only a comparatively small proportion of our employees.

Why do we not make greater efforts to cultivate the enthusiasm of our other employees, especially the workmen in the plant?

There is an especially strong reason why we should "sell his job to the workman." The sales force in most cases work mainly on a commission basis, whereas the workmen must necessarily be paid by the hour or day. If the salesman is not sold on his job this attitude of mind is reflected in his monthly paycheck, but if the workman's enthusiasm flags it is reflected in diminished results without decreased remuneration.

Of course, the inefficient workman can be fired, but analysis of hiring and firing costs prove that breaking in a new man is a costly operation, and—unless the worker is actually incompetent—isn't it rather a confession of inefficiency in ourselves to have to waste the money expended on him during the initial stages of his connection with us?

There are, I believe, several reasons for this neglect of the workman's mental attitude towards his job. There are those who declare that the average workman cannot go far wrong as long as there is a foreman to drive him hard enough to get the right proportion of results for the money paid. This contention may be right—but I doubt it. No foreman, however pushful, can get as good results from the workman as the latter can get for himself through enthusiasm in his firm and his job.

There are others who declare that the workman is a chronic "kicker" anyway—that no matter what you do, you cannot satisfy him. And I do not think this is right either.

A Big Sales Problem

Selling the workman his job is a sales problem. It is just as essential as the external selling problem upon which we spend maybe many thousand dollars every year. How much do we of the lighting fixture industry spend upon this internal educational sales problem? How many of us even trouble to study it at all?

In another sense the securing of the workman's coöperation and enthusiasm is a problem in what one may term human engineering. Now when we install a gas engine or an electric motor we do not put it down haphazardly anywhere. We consider carefully the work it has to do. We study out the requirements of its motive power. But when it comes to man power—the most expensive and most valuable productive power in the plant, we are apt to dismiss the whole problem as something which is up to the foreman of the shop. And our profits suffer accordingly.

The motive power of the workman is his enthusiasm in his firm and in his job. How then are we to produce this and utilize it, when produced, to the best advantage?

An extremely interesting talk was given by the well known authority on labor problems, Whiting Williams, at one of the luncheons of the National Council Convention at Buffalo last February on this subject. He demonstrated that the three main requirements were as follows:

1. *To provide steady and regular jobs for employees and pleasant conditions of working.*
2. *To acquaint them with the employer's aims and ideals.*
3. *To instil enthusiasm for their work.*

Excellent. Now how are we to do it?

Let us take first the question of providing steady jobs at fair wages. Did you ever notice that fixture men are the poorest paid of any of the electrical workmen? Yet there don't appear to be many millionaires among the employers either. They seem to have their work cut out to get along. How is it

that 87 cents an hour is the average pay for a skilled fixture hanger, whereas Henry Ford can afford to pay his mechanics a higher scale? The answer is that one industry is highly standardized—the other is not.

The lighting fixture industry, like many others, is subject to wide differences of demand.

In a standardized industry these inequalities of demand are largely counteracted by the making up of stock for fixture use. In an unstandardized industry this is only practicable to a very limited extent because no manufacturer can make up more than enough for his own immediate use.

In a standardized industry a manufacturer who is suddenly flooded with rush orders can generally buy enough parts from other makers to tide him over his difficulties. Where no standard prevails this is obviously impossible. In order, therefore, to provide regular jobs we of the lighting fixture industry must standardize our parts—or at any rate their principal dimensions at the points where they must be mechanically connected with adjacent parts.

Yet another important advantage of standardization is the possibility of lowering costs without lowering either profits or wages. At present the comparatively high cost of lighting fixtures as compared with other products of equally complicated construction restricts the market to those who can afford to pay the price. This is a well known factor of marketing. A hundred years ago, when watches were made entirely by hand, comparatively few were sold. Today a man without a watch is a rarity. Increased production lowered costs, opened up a bigger market, increased demand, increased wages and increased profits.

The second condition required to promote better efficiency in the plant is pleasant conditions of working. By this I do not necessarily mean the kind of welfare work which manifest itself mainly in costly experiments in paternalism which are often an insult to the workers and are keenly resented by them.

Of course, it is just as unreasonable

to expect a man to reach maximum production when hampered by insufficient light or physical discomfort of other kinds as it would be to buy a costly machine and then to leave it exposed to the weather. But the most important point of all is to make each man feel that the boss regards him as a man and not a number; that his work is a part of the company's machine, that it is important that it should be well done; and that it is really useful.

They Worked Together

Labor troubles are mainly a modern growth. In the olden times, when a mechanic began and finished an article throughout, he had the pride of having created something beautiful or useful, or both. He came into personal touch with the boss, and either liked or disliked him as man to man. The advent of the larger modern corporation and the demand for greater production removed the workman from direct contact with his employer and generally confined his work to one or two operations of manufacturing. Thus the foreman became the representative of the boss—and few foremen are gifted with enough knowledge of human nature to arouse their worker's enthusiasm in their jobs to the right pitch.

Thus it happens that Bill Jones who is ready to "soldier" on the job as much as he dare will cheerfully do much harder work for hours together digging up his garden; and that Jack Brown who feels that eight hours a day is too much to expect anyone to work, went without food and rest for 48 hours at a stretch at Chateau Thierry, and then demanded, not "quitting time," but more ammunition to keep on fighting.

There appear to be one or two ways in which this attitude towards the job can be overcome. The first is through the plant House Organ or through meetings at which the coördination and relation of the various operations in the plant and of the importance of each may be put forward. Another, which has been less frequently tried, is through periodical changes of work—as for instance, interchanging the operators of two or more machines or hand jobs which, while not widely differing in their requirements as to the manual skill, afford a change from the monotony of a single job.

Apparently this would lead to loss of efficiency. In practice, however, I believe that much changes if not made too frequently would actually increase production because of the added interest.

It is a well known fact among psychologists that in learning a new operation or changing from one kind of work to another, progress is exceedingly rapid up to a certain period. Beyond that there is a dead level of performance, followed in turn by a decrease of efficiency. Following this, the curve of production again rises and again falls as before, until the limit of production for that particular operation is attained. Would it not be possible by occasional changes of work at the correct intervals to eliminate some of the drops in progress, and eventually make a workman who is able to operate one or two machines? Not only would this make jobs more interesting, but it would minimize the danger of strikes, because it would be practically impossible for one department to completely tie up the plant's output.

The third point is to acquaint the workmen with our aims as employers. Most troubles and decreases of efficiency are due to misunderstanding between the boss and his men. At heart every lighting fixture manufacturer is just as anxious for his employes to earn good money and be satisfied with their job as they are themselves. The trend of the speeches at the recent Buffalo Convention of the National Council of Lighting Fixture Manufacturers proved that as a whole the fixture men were more than willing to give a square deal—and then some. But how many of them will take the trouble to make sure that their employes, who were *not* at Buffalo, know their views?

The fourth point is largely covered by the preceding items. If the square deal is a self evident fact in the plant there is going to be maximum production as a matter of course. Don't we all know the boss who is obeyed promptly and cheerfully because his employes know that he knows more than they do about the job, and not merely because he is paying them their wages? Don't we all realize the magnetic personality of the boss whose men work *with* him rather than *for* him?

The Golden Rule—the square deal—is rather old fashioned in these days of efficiency experts. But no one has yet succeeded in finding a really efficient substitute. Moreover, when the world at large—employers and employes—discover that it is more than a theory and that it really *pays*, no one will want to find a substitute. The National Council of Lighting Fixture Manufacturers has determined to enter upon an extensive edu-

cational policy within the trade. It is planning means to place before everyone in the plants of the members, from the president to Mike the laborer, the aims of the association, the best methods of increasing output and efficiency, and the important part which each man in each organization plays in the uplift of the industry. It is going to place before the workers in easily understood form some of the fundamental laws of economics which are at present little understood by the average mechanic and whose frequently adverse effect upon his pay and the continuity of his job are so often seized upon by the agitator as a proof of the wickedness of capital. It will show to executives new possibilities of advertising in reducing operating costs without decreasing wages. It is aiming to produce industrial peace and prosperity. It is a big job—but it is in the right hands to push it through.

The human voice can sooth and please as well as insult and growl.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, OF ELECTRICAL CONTRACTOR-DEALER, published monthly at Utica, N. Y., for April 1, 1921.

STATE OF NEW YORK, } ss.
County of New York, }

Before me, a Notary Public in and for the State and County aforesaid, personally appeared W. H. Morton, who, having been duly sworn according to law, deposes and says that he is the General Manager of the ELECTRICAL CONTRACTOR-DEALER, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, National Association of Electrical Contractors and Dealers, 15 W. 37th Street, New York, N. Y.

Editor, Farquison Johnson, 15 W. 37th Street, New York, N. Y.

Managing Editor, none.

Business Manager, W. H. Morton, 15 W. 37th Street, New York, N. Y.

2. That the owners are:
The National Association of Electrical Contractors and Dealers. Not incorporated. Composed of 2200 members, of whom principal officers are:

James R. Strong, Chairman, 526 W. 34th Street, New York, N. Y.

W. H. Morton, General Manager, 15 W. 37th Street, New York, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are none.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the Company, but also, in cases where the stockholder or security holder appears upon the books of the Company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

(Signature of) W. H. MORTON,
General Manager.

Sworn to and subscribed before me this 28th day of March, 1921.

AUGUSTA WOSKOFF,
(My commission expires March 31, 1921.)

Window Suggestions For Electric Sewing Machines

BY ERNEST A. DENCH

Wide Variety of Novel Trims Described by Expert Who Recommends Use of Ideas by Contractor-Dealer Stores

There are still hundreds of housewives who use their own motive power to operate the treadle type of sewing machine. They do not realize the amount of physical energy that they waste every day in this direction—energy that could be conserved were electricity the motive power employed.

A powerful propaganda weapon is the show window, which should be employed on every possible occasion. A few electrical sewing machine window displays that have been arranged by other representative establishments are offered as suggestions in this connection.

Frederick and Nelson, Seattle, Wash., placed in their window an attractive woman wax figure. She was posed sitting at an electric sewing machine, sewing on a dress. Nearby stood a form on which to fit the dress. Around the figure were arranged all the usual things needed for sewing, such as threads, scissors. Several pieces of wicker furniture judiciously placed served to impart the necessary home atmosphere. This window drew large groups of interested feminine passersby.

The Singer Sewing Machine Company, Charlestown, S. C., introduced as a window display feature, a large, handsomely dressed doll seated at a miniature sewing machine. A small electric motor was attached to the machine, so that the machine was whirling along merrily, the doll's hands apparently guiding some work on the machine. The window was trimmed to represent a parlor, while there were two smaller dolls at play on the floor. Another baby doll reclined in a cradle, rocked by a band from the motor running the machine. Card above stated:

The Sewing Machine Makes a Happy Home

The Charleston Sewing Machine Company, Charleston, S. C., covered the floor of their trim with a heavy felt rug, beautifully appliqued in felt figures and leaves, the work being done by a sewing machine. The walls were hung with curtains, fluted, ruffled and tucked on

the same machine. A cabinet electric model occupied the center of the window, the machine being provided with a handsome fumed oak cabinet, brass inlaid. When the machine is closed, there is nothing about it to indicate that it is a sewing machine. Top of the machine was a scarf of fine imitation Mexican drawn work, done on white linen on the machine. The exhibit on the cabinet was accompanied by a large pot of primroses in full bloom. Hanging in the window was a cage populated by several live canaries, together with a card that pointed out:

We sing all day, the machine is a silent runner.

Tied to the machine with a broad white ribbon was a gilt edge card that announced:

*FREE! FREE!! FREE!!!
This beautiful machine given away, Saturday, March 27, 1921, absolutely free!*

In the store numbered tickets were given away to all who cared to ask for them. The coupons corresponded in number with those that were deposited in the locked box.

The Kisling Store, Norfolk, Neb., equipped their window as a sewing room. Cloth was displayed over chairs, as though waiting for the sewer. The machine in the window was run by electricity, the cloth on the machine being in motion.

The Denver Gas and Electric Company, Denver, Colo., rested an electric sewing machine on a very handsome table. The garment that was supposed to be in position for stitching was a roll of canvas, joining so as to make a hoop. As it moved under the feeder mechanism of the machine, attention was attracted to the many clever catch phrases printed thereon, such as:

*I am the Electric Sewing Machine.
I can make 100 to 800 stitches per minute.
I know that I am beautiful.*

The Public Service Company, New-

ark, N. J., showed a large round mould in the middle of their trim, the mould being covered with rose plush, on top of which several types of electric motors were laid. Billows of the rose plush formed on the floor at each side, and here were cards giving such pieces of information as the following:

With this motor attachment, any make of machine is electrically driven.

The Electric Sewing Machine operates at any desired speed. Controlled by the weight of your foot. It is light and easily carried to any room.

The New York Edison Company, N. Y., briefly dwelt upon the meritable features of the electric sewing machine in a booklet dealing with "Little Servants in the Home." The portion referring to the electric sewing machine motor is quoted below:

Here again an Electric Servant has been found to make a tedious task a pleasure. Simply apply a tiny motor to your sewing machine, and it will do away with all the hard work of sewing. It is ready at all times to turn the wheels, and it will work tirelessly for hours.

Hahnes, Newark, N. J., arranged a table in the middle of their trim. A fancy lace table cloth was laid on the table, in the center of which reposed a vase of roses. At each side was an electric sewing machine, while down in front were pedestals containing the various sewing accessories. The window was covered with green velvet, several framed pictures of Colonial sewing scenes being hung at the back.

Now that clothes cost so much, many industrious housewives with slender allowances are making their own wearing apparel, so the opportunity for electric sewing machine sales was never so bright as it is today.

Disagreement seldom leads to a sale.

Electric Street Cars

Celebration of Anniversary of Introduction Recalls Early Experiments

Early last month occurred the thirty-third anniversary of the establishing of the electric street car, and the story of early experiments as reviewed by the *New York Evening Post*, is interesting:

It was in Richmond, Va., on May 4, 1888, that thirty electric cars equipped with overhead trolleys were put into operation and the contract for the first complete, double-tracked line of this character was accepted as completed. For fifty years prior to that day inventors, ranging from Thomas Davenport, a Brandon, Vt., blacksmith, to most of the famous inventors of the period, had been working toward the goal which Frank J. Sprague of New York City finally achieved.

Stephen D. Field and Thomas A. Edison began experiments late in the '70's, and in 1879 Field filed an application for a patent on a third rail system. In 1880 Mr. Edison built a small road at his laboratory in Menlo Park, N. J., and demonstrated the practicability of electricity as power for transportation. In 1883, at expositions in Chicago and Louisville, Messrs. Field and Edison exhibited an electric locomotive which ran around a circular track one-third of a mile in length.

The period from 1880 to 1888 was productive of many valuable contributions to the future industry, by Edward M. Bentley and Walter H. Knight, who in 1884 built a two-mile line in Cleveland; John C. Henry, who built small roads in Kansas City and California; Prof. Sidney H. Short of Denver, Dr. Wellington Adams of St. Louis, Charles J. Van Vepoele of Chicago, and Leo Daft of Greenfield, N. J. Daft perfected an electric engine which in 1886 hauled a total of 300,000 persons in old horse cars between Baltimore and Hampton, Va.

Some of Mr. Sprague's earliest tests were made in New York City, and among those who came to witness them was Jay Gould. Unfortunately, one day Mr. Gould took a position near an open safety fuse on one of the cars and when a fuse suddenly blew out with a starting flash Mr. Gould attempted to leap from the car and at once lost all interest in the future of electric railway development.

At the beginning of operation of electric cars in Richmond wages were from 75 cents to \$1.75 a day. The

average wage paid by sixty companies having more than one hundred miles of track each in the United States today is 58 cents an hour.

Today there are more than 80,000 electrically propelled passenger cars in the United States, which carry a total of approximately 14,000,000,000 persons, or ten times as many as ride on the steam railways, yearly. The investment in lines is approximately \$5,000,000,000, the trackage is 44,400 miles, and 300,000 men are employed.

How to Install Accounting System

Journal of Electricity and Western Industry, San Francisco, Presents Following Interesting Article in April Issue

One of the best things about the standard Accounting System is that you need not close up shop and suspend business while you install it. The Capitol Electric Company of Berkeley, California, is one of the shining examples of how to do it, and its managers will tell you that the daily round and common task did not suffer in the least during the process.

This company was not one of those who went out and demanded the Standard Accounting System. It had a comparatively satisfactory system of business records already in operation, though this was carried on principally as a basis for keeping customers' accounts, without the detailed analysis of the whole cost of doing business which the Standard Accounting System includes.

The company's new departure was mainly the result of pressure from without, which took the form of gently persuasive visits from a member of the California Electrical Coöperative Campaign, a professor of accounting, an editor, and a research accountant. These found the management very open minded, however, and after a few days were informed that they would be allowed to use the store as a laboratory, and to install the accounting system from the first detail to the last.

The research accountant, who incidentally is the author of the series of articles on the system now being published in these pages, was promptly given access to the company's books, and permitted to come and go as he pleased. The fullest coöperation was accorded him in his work, and every-

thing proceeded with perfect smoothness and dispatch.

Order of Procedure

The simplest part of the system on which to begin is the job envelope system. A job envelope was started for every contract job under way, and all material and time slips relating to each job filed in the proper envelope. The method of handling these have already been explained in Mr. Kelly's series of articles. After the job envelopes, the customers' accounts were taken up, a page in the special Accounts Receivable ledger being started for each account outstanding. Each ledger entry was represented by an itemized bill on the customers' bill file.

About two days were occupied in transferring the customers' accounts from the card file to the ledger, and checking up the corresponding items and totals on the bills. The cash receipt tags were also introduced at this time. From the Accounts Receivable ledger, the accountant proceeded to the Accounts Payable ledger, making entries from the voucher file for all accounts owing.

It is possible for any establishment to install this part of the system immediately, adopting the job envelope, the cash receipt tag, and the ledgers for accounts receivable and accounts payable without waiting until the system can be installed in its entirety. When these forms are in working order the remainder of the installation is a comparatively simple matter.

Following this part of the work a complete inventory was made of the company's assets, beginning with the least movable type, such as the furniture, taxes paid in advance, and so forth, and ending with the merchandise, both that in the store and that out on jobs. A compilation of liabilities completed the survey of the business, and the data was in shape for the introduction of the General Ledger for the double entry system, and the making out of the monthly statement.

A Simple Process

The work was started during November, and by the end of the month the complete system was in working order. Nothing had been upset. There was no sudden or drastic change as far as daily methods were concerned; only an adoption of some new forms, and a slightly different system of recording transactions. But the resulting array of facts provided a complete picture of the

business as it stood at the end of the year, and on the monthly statement it was possible for the management to see at a glance just how much of every dollar received went in overhead, how much in actual cost, and how much was profit.

Every financial factor in the business was in black and white; there was no element of guesswork and no element of uncertainty as to whether business was being conducted at a profit, or whether apparent profits were being neutralized by a large overhead.

The value of complete visualization of business conditions has often been offered as the major reason for the establishment of a comprehensive accounting system—and the experience of this company may be regarded as a realization of this argument.

All this had been accomplished quietly and inexpensively by the one expert with the cooperation of the management. The bookkeeper did not get brain fever, and nobody was confused by the new order.

Incidentally, much credit is due to the Capitol Electric Company for the public spirited attitude which made possible this highly successful official experiment, and for the wholehearted cooperation shown both to the electrical interests that instituted the idea and to the accountant who did the work. That the managers have not regretted their action is obvious to anyone who mentions the new accounting system to them. Asked how they like it, they regard you proudly, and remark, "Why, you couldn't take it away from us!"

Anniversary Convention Program

Committee of Arrangements Presents First Draft of the Big Doings at Buffalo, New York, Celebrating the Founding of the Organization

Those who do not remember the old song, "Put Me Off At Buffalo," should immediately get a copy of it and familiarize themselves with its context. It looks now as though everybody who is in any manner interested in the National Association of Electrical Contractors and Dealers would want to be put off at Buffalo during the week beginning July 18. At that time the contractor-dealer branch of the electrical industry will hold its Anniversary Convention in the Electric City.

It was in the month of July, 1901, that the organization was founded which later became the National As-

sociation. It was started with less than fifty members and now has a membership of upwards of twenty-three hundred. Its scope takes in every state in the Union, as well as every province of Canada, and also includes Mexico. So in reality it is international instead of national.

This organization will now celebrate its twentieth anniversary as befits its importance and standing in the industry. Reservations are being made by representatives from all sections of the country and it is safe to say that this will be the largest and most interesting gathering of contractor-dealers ever brought together.

Since the annual convention in Baltimore last October, committees have been busy making arrangements for the next event. While the program is not yet fully completed, the following tentative schedule outlines the high spots and gives assurance of many interesting features:

Headquarters, Lafayette Hotel, Buffalo, New York.

Monday, July 18

National Executive Committee Meetings at 10 a. m. and 2 p. m., in Tea Room—first floor.

Registration Bureau opens at 4 p. m., in Room 122—second floor.

Tuesday, July 19

National Executive Committee Meeting at 10 a. m. and 2 p. m., in Tea Room—first floor.

Wednesday, July 20

Convention Sessions at 10 a. m. and 2 p. m., in Ball Room—first floor.

Thursday, July 21

Convention Session 10 a. m. and 2 p. m., in Ball Room—first floor.

Opening Address—E. D. McCarthy, Buffalo, Chairman Local Convention Committee.

Address of Welcome—Mayor of Buffalo.

Response—James R. Strong, New York City, Chairman National Association.

Historical Address—Charles L. Eidlitz, New York City, First President of National Association.

Address—The Business Outlook—Samuel T. Botsford, Buffalo, N. Y.

Presentation of Chairman's Emblem to Mr. Peet—Robley S. Stearns, New Orleans.

Response—W. Creighton Peet, New York City.

Financing for the Contractor-Dealer—Alfred E. Martin, South Bend, Ind.

Cost Data on Installation Work—Kenneth A. McIntyre, Toronto, Canada.

Capitalizing Your Opportunities—W. L. Goodwin, New York City.

Reports referred to meeting by National Executive Committee.

Report on Council on Industrial Relations—L. K. Comstock, for N. A. E. C. & D.; J. P. Noonan, President I. B. E. W.

The Conduct of a Contracting Business—M. H. Johnson, Utica, N. Y.

Convention photograph to be taken at 12:30 p. m., at Sailors' and Soldiers' Monument opposite Lafayette Hotel.

Automobile trip for ladies leaving Hotel at 3 p. m.

Reception and Dance at 8 p. m., in Ball Room—first floor (informal).



Main Street at Genesee Street, Two Blocks From Lafayette Hotel, Which is National Headquarters of Anniversary Convention at Buffalo

Organization business.

What a Trade Association Can Do and What Some Are Doing—Charles S. Estey, Chicago.

Economical Retail Distribution—C. H. Rohrbach, Secretary American Society of Sales Executives, New York City.

River Trip for ladies leaving Hotel at 2 p. m.

Annual Dinner (informal) in Ball Room—first floor at 8 p. m., (dancing).

Friday, July 22

Convention Session at 10 a. m., in Ball Room—first floor.

Adequate Wiring for the Proper Lighting of Residence—M. Luckiesh, Director of Applied Science, Nela Research Bureau, Cleveland.

The Home Electric Idea—O. H. Caldwell, Electrical Merchandising, New York City.

Further details to be announced later.

Trip to Niagara Falls in special trolley cars leaving corner of Main and Court Streets, two blocks from Lafayette Hotel, at 2 p. m.

Trip over Gorge Route at Niagara Falls and visit to Power House.

Special trolleys leave Niagara Falls at 6 p. m., but tickets will be honored on any latter regular trolley.

Saturday, July 23

Meeting of National Executive Committee at 10 a. m., in Tea Room—first floor.

All meetings are open to all those interested and a full discussion of each subject is invited.

The headquarters of the National Association at the Lafayette Hotel will surely be the scene of intensive activities during the entire week of the various meetings. There are a half dozen other

good hotels within a short distance of the Lafayette, but as the National Photographers' Association is also to hold its annual convention in Buffalo during the same week, all of these hotels will probably be filled to capacity.

These being the conditions it will be well for those who are so fortunate as to have uncles, or brothers, or cousins living in Buffalo to arrange with them to prepare for a regular old fashioned family party during the week of July 18. If an old home week cannot be established, then take the matter up with the hotel committee and make reservations. But the time is short and arrangements should be made at once.

Send requests for hotel reservations to Richard Wahle, chairman of the hotel committee, 222 Pearl Street, Buffalo, New York.

Rhode Island Electrical League

Newly Formed Organization Takes in all Branches of the Electrical Industry

In the State of Rhode Island, especially in and around Providence, the coöperation between the electrical contractors and dealers and between these and the central stations has for years been exceptionally good. The Narragansett Electric Lighting Company keeps an average of about ten lighting salesmen busy a good part of the time selling house wiring, yet the company does no wiring itself. All the contracts secured by these men are turned over to the different contractors, the contractors making their own prices on the jobs and receiving their money from the company which in turn collects from the consumer.

Dealers also serve the central station in various ways as agent, which proves of mutual advantages to both the company and the dealers. There is probably no section of the country where the good feeling and coöperation is greater than that which exists in this part of Rhode Island.

In addition to serving Providence and

Let's have the truth about electricity!

ELECTRICITY is always safe. It is only when slipshod workmanship and cheap materials enter into its use that there need be any concern about safety.

You can't eat cheap food safely. You can't entrust your health to a house with a leaky roof—or shoes with holes through the soles—or threadbare garments which expose your body to the ill elements bring with them.

When a home is properly wired, when only tried and true appliances are used, when electrical man and electric service user both agree that nothing will do but the best for each purpose—there will be no thought as to the safety of electricity.

Members of the Electrical League want you to have the best of workmanship and material on every electrical installation or appliance. It is one of the purposes of the League to eliminate the slipshod-in material, workmanship or method of use.

Get Acquainted with this Symbol!

Rhode Island Electrical League

An Organization of Contractors, Dealers, Jobbers and Manufacturers of Electrical Products

Example of Newspaper Advertising, From One Quarter to Half Page Size

the suburban communities on both sides of Narragansett Bay, the Narragansett Electric Lighting Co., also serves Westerly. The Blackstone Valley to the north of Providence is served by Stone & Webster Company, while Newport and vicinity is taken care of by the Newport Light and Power Company. This means that the central station service of the state is in the hands of only three companies, all of which see the advantages of close coöperation with the contractor-dealers.

For fifteen years the Narragansett Electric Lighting Company has been holding meetings where educational programs have been put on and to which all electrical contractor-dealers have been invited. However, it was thought that very much more could be accomplished if there could be a real live organization of electrical men. Accordingly plans were made for organizing the Rhode Island Electrical League and this organization is now in full working order with fifty members and a fund of \$16,000 for publicity work.



Hotel Lafayette, Convention Headquarters at Buffalo

"The prime object of the League," states a circular recently issued, "is to promote industrial, commercial and social welfare of its members, also to participate in activities for the improvement of the electrical business, and to be of service to the public."

It has the two fold purpose of developing the men engaged in the business, and of making it possible for them to be of greater service to the public, and also of educating the public on the subject of electricity, its uses and wonderful advantages. Its plan includes important activities the success of which depends entirely upon the bringing together into one league, all of the various electrical interests in Rhode Island. Suggested activities follow:

1. To conduct an educational program for the improvement of the electrical business.
2. To bring its members together once each month into one big electrical family.
3. To create better acquaintanceship, and greater understanding among the men engaged in the electrical business.
4. To discourage selfishness and petty jealousies.
5. To give members an opportunity for open discussion on electrical matters.
6. To perpetuate friendly relations between everybody in the electrical industry.
7. To improve business methods.
8. To improve service.
9. To suggest store arrangement improvements.
10. To encourage the use of high grade material and workmanship.
11. To encourage the sale of better lighting fixtures, and the use of electrical household appliances.
12. To create a desire for electric service, and not merely for wire and lamps.
13. To encourage necessary outlets in all residential, commercial and industrial installations.
14. To coöperate on standardization movements.
15. To offer architects and builders information and coöperation for the proper laying out of electric installations.
16. To effectively carry to the public, "Do It Electrically."

The money now in the treasury was raised largely by subscription, but as soon as the League has established itself in good shape the funds will probably

be collected in accordance with the size and kind of business done, in much the same manner that it is collected by the Society for Electrical Development. In fact the League might be described as a combination of a local Electrical Development Society and a State Association of Contractor-Dealers.

The monthly meetings will be educational in nature. The education of the public is being done through advertising. This advertising is being handled by an advertising agency. In this way the League is assured of having the publicity work carried out far more effectively than would be the case if all the details had to be handled by a committee, no member of which could give all his time to the work.

Danielson & Son of Providence, the agency handling the account, is an old established concern that knows the Rhode Island field thoroughly, and is handling the advertising in a very effective manner. As a matter of fact, William L. Goodwin, representing the Society of Electrical Development, gave high praise to the first advertisement when he was speaking at a recent meeting of the League.

The first four weeks of the advertising campaign have been devoted to selling the League to the public. The second four weeks will deal with house wiring. The first week the owners of the unwired houses will be the object of the appeal. The second week of the

house wiring campaign will have as its theme convenience outlets. The third, the idea of "No Muss and No Fuss" in having the wiring done. The fourth week will consider wiring for the future and will go out after the home builder.

Beginning with the ninth week, that is, following the house wiring campaign, will come appliance advertising. It is planned to have the dealers advertise in such a manner during this campaign that they will coöperate with and reinforce the League advertising.

The schedule of the topics will be sent to each member several weeks or months ahead and he will also be supplied with advance proofs of the advertising so that he will have no difficulty in tying his own advertising to that of the League. The League seal has been furnished to all state newspapers.

The officers of the League are president, M. F. Falk, president of the Union Electric Supply Company; secretary, Frank Gallagher, manager lighting division Narragansett Electric Lighting Company; treasurer, R. L. Huse of the firm of W. A. Huse and Son. The president is a jobber, the secretary a central station man, and the treasurer a contractor-dealer. Having each class of the electrical industry represented on the first board of officers augurs well for the future and assures smooth sailing. Placing the advertising work in the hands of experts has already been demonstrated as a wise step.



M. F. Falk, President Rhode Island Electrical League and President of Union Electric Supply Co., Providence, Prepared to Gather Electricity From the Clouds



• CONTRACTING •

A Department Devoted to the Study and Discussion of the Practical Problems of Electrical Contracting

ALLAN COGGESHALL Associate Editors HENRY F. RICHARDSON



(Selection of A. C. Motors & Controllers)

The various types of D. C. Motors and controllers are rather generally understood and serious trouble due to improper selection of such apparatus is not frequent. There seems to be more difficulty in the selection of A. C. apparatus. An error which is frequently made in the selection of A. C. Motors is to use too large a motor resulting in considerable decrease in power factor. The power factor at $\frac{3}{4}$ or $\frac{1}{2}$ load is substantially less than at full load. With single phase alternating current there is not much choice. With polyphase apparatus the factors which must be considered are many.

The simplest, cheapest and most reliable polyphase motor is the induction type with squirrel cage motor. The rotor of this type consists of a number of copper bars arranged in the form of a cylinder and with the ends of all the bars short circuited by the end rings on which the bars are mounted. The two or three phase currents in the stator winding create a "rotating field" which so to speak drags the rotor around with it. For this reason the maximum speed of such a motor is the speed of the rotating field which is the frequency of the current divided by half the number of poles of the stator windings.

This is known as synchronous speed. For instance, the synchronous speed of a four pole induction motor on a 60 cycle circuit will be 1800 R. P. M., that is 3600 cycles per minute divided by 2. The synchronous speed for an 8 pole machine would be 900 R. P. M. For this reason induction motors are generally high speed. An induction motor operates at something less than synchronous speed, the difference being the "slip." A squirrel cage induction motor of any size can be started by being thrown directly on the line without any starting device without injury to the motor. However the mechanical shock to the device to which the machine is connected may be serious and the current inrush may be from five to eight times the full load running current.

This is usually objectionable in motors of any size. If the service line to which the motor is connected is not of large capacity the voltage may be so cut down by the starting current as to interfere with the operation of other motors, not to mention lights, and may even prevent the motor which causes the in rush from coming up to speed under certain conditions of load. Most lighting companies limit the size of induction motors which can be thrown on their lines without starting devices. This limit is often 5 to $7\frac{1}{2}$ H. P. The best efficiency is obtained by a motor with a low resistance rotor. Such a motor will also more nearly approach synchronous speed. However such a motor has low starting torque and in the case of machines requiring large torque at starting should not be used without careful consideration. Many such motors have been installed where the size of motor was ample for the machine but the starting torque was not sufficient to start. Sometimes as in the case of air compressors an "unloading device" may be used which relieves the load until the motor is up to speed. Again take the case of the centrifugal pump mentioned in a previous article, pumping to a roof tank and with a check valve in the line. In such a case if the motor develops static head enough to open the check before coming up to operating speed, it may be impossible to bring it up to operating speed. In the case cited in the previous article the motor had to be changed. In another case in the writer's experience where a squirrel cage motor was used because that was the only motor available the motor came more nearly up to speed before opening the check and the installation was satisfactory. However it does not seem to be good engineering to take such a chance.

Where larger starting torque is required a motor should be used with a higher resistance rotor. Motors of the squirrel cage type may be obtained from some manufacturers with high resistance rotors. Possibly some manufacturers still make induction motors of the

wound rotor type with higher resistance windings. However such machines gain starting torque at a sacrifice of efficiency and in most cases it will probably be found more economical to use the "slip ring" type.

A "slip ring" induction motor has a low resistance wound rotor with the terminals of the rotor windings connected to "slip rings" which are in contact with brushes. By connecting variable resistances to these brushes a high starting torque may be obtained for starting and the resistance cut out for running. With such a motor a considerably greater starting torque can be obtained than with the squirrel cage type and with a considerably less current inrush. Starting torque increases as the rotor resistance increases up to a certain amount and then decreases as resistance is added. However the current inrush consistently decreases as the rotor resistance is increased. With this type of motor therefore the motor should be thrown on the line with all resistance in. If this does not give sufficient torque to start the resistance may then be cut out step by step until sufficient torque is obtained and after the motor has started the remaining resistance may be cut out step by step until the brushes bearing on the slip rings are short circuited. A slip ring motor may be made to develop its maximum torque at various speeds by adjusting the resistance in the rotor circuit. The greatest starting torque obtainable with this type of motor is usually about $2\frac{1}{2}$ times full load operating torque. This torque may be obtained at starting if necessary with a current inrush of about $2\frac{1}{2}$ times running current. With the variable resistance adjusted for less starting torque the current inrush is proportionately less being about the same percentage of the full load running current as the starting torque is of the full load operating torque. In most cases it will be found that a slip ring motor may be started and brought up to speed with a maximum current inrush of 1 to $1\frac{1}{4}$ times full load current.

On the other hand with the average

squirrel cage motor the maximum starting torque is only about 1.6 times full load torque and to obtain this maximum the motor must be thrown direct on the line at full voltage with a current inrush of five or more times full load current. This as we have stated before is usually objectionable in large motors and is usually not permitted by service companies. Slip ring motors are therefore generally advisable where high starting torque is desirable. Slip ring motors may also be used as variable speed motors with a speed variation from 50 percent to full. It should be borne in mind however that the speed will vary somewhat with the load and such motors are not ordinarily satisfactory where close regulation at the various speeds is required as with machine tools. With machine tools squirrel motors are often used, the speed variation being obtained by gearing.

Multi-speed induction motors may be obtained for use on 60 cycle circuits. These motors have two field windings and are arranged and provided with controllers which connect the field windings in several ways to produce 4 different numbers of poles. In this way synchronous speeds of 1800, 1200, 900 and 600 may be obtained. This variation may be sufficient for many operations requiring variable speed. These motors are more expensive than standard induction motors.

Synchronous motors are seldom used except in very large sizes. In a synchronous motor both rotor and stator have windings, one or the other, usually the rotor being designed to be connected to a direct current circuit. The other winding must be connected to an alternating current circuit. Such a motor operates at synchronous speed without "slip" as in an induction motor. A true synchronous motor is not self starting and if when running a sufficient overload should be thrown on to cause the motor to slow down at all it will drop out of "step" and stop completely. However polyphase synchronous motors are generally designed with some of the elements of an induction motor so that they may be started, without the D. C. field, as an induction motor. A true synchronous motor without the induction motor feature must be started and brought up to synchronous speed by an outside means.

The direct current winding of a synchronous motor is usually supplied by a small generator known as an exciter. The exciter may be direct connected or

belted from the shaft of the motor or where there are several synchronous motors one or more motor generators may be used to supply direct current for all the motors.

Synchronous motors even with induction motor characteristics have very low starting torque and cannot be started under load. Synchronous motors probably require a higher class of help for their operation than other types of A. C. Motors. Small size synchronous motors are sometimes used where it is desirable that several pieces of apparatus operate at exactly the same speed. However the principal reason for the use of synchronous motors lies in the fact that the power factor of the motor may be considerably varied by adjusting the direct current field excitation. The power factor may be adjusted to unity if desired or by over exciting the field the power factor may be reduced to less than unity but leading instead of lagging as in an induction motor. Such a motor of large size connected to a circuit with induction motors of low power factor may partly or entirely neutralize the poor power factor of the induction motors. Synchronous motors are sometimes installed and run without load simply to improve the power factor of the entire installation. It should be noted however that while a fully loaded synchronous motor may be run at unity power factor such a motor will not materially neutralize the lagging power factor of other motors unless it is only partly loaded or running without load. In general synchronous motors are selected where the driven load on the synchronous motor is to be fairly constant. Most lighting companies make a very attractive rate for unity power factor installations where current is used for long periods and for this reason synchronous motors are often used for ice plants and for driving large motor generators.

In the case of a pumping plant, for instance, at some distance from a lighting company's line, the current to such an installation and consequently the size of wire and the power loss may be reduced to a minimum by operating at unity power factor. In a long line this may be quite an item and the use of a synchronous motor to operate the pump may be advisable.

Starters for alternating current motors may be of either the resistance or compensator type. These may be either hand operated or may be of the automatic type and controlled through but-

tons or other contact making devices.

Assuming that with a certain squirrel cage induction motor the starting inrush would be too great if the motor were to be thrown directly on the line then some form of starter is necessary to limit the starting current. The resistance type starter is the simplest and generally the cheapest. This consists of resistance units inserted when starting into several of leads to the motor and cutting down the voltage at the motor terminals accordingly. The proper amount of resistance depends on the characteristics of both motor and load. With this type of starter of course the effect of the resistance in cutting down the line voltage depends on the current passing through the resistance. As the current varies at starting the voltage also varies. This may be objectionable as for instance if a motor should start hard then the starting current would increase which would further cut down the terminal voltage on account of the resistance in which case it might be impossible to start the motor at all. Also with a resistance type starter even if sufficient resistance be used to cut the terminal voltage down to say 65 percent of line voltage while the starting torque will be cut down in the average motor to 67 percent of full load torque the starting inrush is still three times the full load running current. The terminal voltage cannot usually be reduced much below 65 percent and still start the motor properly. For this reason resistance type starters are not generally used for motors of any size where there is objection to large starting currents. Many lighting companies do not permit the use of resistance type starters except in small motors. Resistance type hand starters are generally furnished with only one step of resistance. Three wire three phase starters are usually furnished with resistance in two legs only.

Compensator type starters consist of auto transformer coils inserted when starting into several of the motor leads. This has a number of advantages over the resistance type also some disadvantages. The cost except in large sizes is usually greater than for the resistance type. The power factor of the motor is decreased while starting due to the reactance of the coils. Ordinarily this is negligible but where a large number of motors are very frequently started this item may be worth consideration. With a compensator starter however assuming the terminal voltage to be cut down to 65 per cent of line voltage, as with the

resistance starter the torque would still be 67 percent of full load torque but the starting current would be only $2\frac{1}{4}$ times the full load current in the leads up to the starter.

The current inrush from the starter to the motor would be the same but that is not so important. Furthermore the voltage at the motor terminals does not vary as the starting current varies so that even if the motor should start hard and the starting current increase the terminal voltage will still be maintained. For these reasons compensator type starters are generally preferable over the resistance type, the only question being in any particular case whether the advantages offset the additional cost. In the larger sizes there is little or no difference in cost. Compensator type starters for three wire three phase circuits are usually furnished with coils in two leads only although they may be obtained from some manufacturers with three coils. With the two coil type the current in the three phases are somewhat unbalanced but this is not usually objectionable. With three coils the three phases are balanced and in case one coil burns out the starter can be operated by cutting out the burned out coil.

With a slip ring motor the variable resistance in the rotor circuit is usually such that by starting with all resistance in the starting current may be limited to little more than full load current so that no other starting device is necessary. When it is desired to use a slip ring motor as a variable speed motor then the variable resistance in the rotor must be designed for continuous or semi-continuous operation. The resistance furnished for starting service only cannot be used if the motor is to be used as a variable speed motor and when a motor is to be so used the character of service should be described in ordering resistance. Such resistances are often furnished in the usual dial type for light service and in drum type for heavier duty. However in many instances the drum type is desirable even in small sizes or light duty on account of the more convenient form and the fact that contacts of the drum type are completely enclosed.

All starting devices should be equipped with overload protective devices, either fuses or overload relays with time limit preferably relays. With slip ring motors a no voltage release or interlock should also be provided to prevent starting with all resistance out.

Fuses are bad in polyphase circuits as one fuse may blow and disruptive currents continue to flow through a single phase winding.

Either resistance or compensator type starters may be either hand operated or of the automatic type. The automatic type generally cost from 10 percent to 50 percent more than the hand operated type the difference in cost being less for the larger sizes. Controllers for slip ring motors may also be of the automatic type controlled by a small drum with a number of contact points or by a group of push buttons. These generally cost 2 to 3 times as much as the hand operated type. The automatic type have a number of advantages particularly with large motors. The motor will receive less abuse with an automatic starter than when started by hand by the average mechanic. If a machine is to be started frequently considerable time may be saved as the operator merely pushes a button and goes on with his work. Certain machines such as emery wheels for sharpening shop tools will probably be left running if equipped with hand starters but are more likely to be started and stopped when needed if equipped with automatic starting devices. Starting devices are often very bulky and where automatic control is used these may be located in an out of the way place, the controlling button or other device only being located on the machine. For instance the controllers may be located on columns near the ceiling where they do not take up floor space. In this case the wiring is also simplified. Another feature of automatic control is the safety to the operator as all contactors, resistance guides, etc., may be located at a point where the operator is not likely to come in contact with them.

(To be continued.)

Estimating

By HARRY C. TURNOCK

Former Chairman of Cost Data Committee Gives Ideas on Scientific Methods

Mr. Abbott's articles under the caption "Improving Estimating Methods; Why and How" have been of unusual interest to me because there is much in them which, if taken into consideration when figuring a job, should reduce estimating labor to fundamentals. Many of Mr. Abbott's ideas coincide with my own. There are, however, several points in connection with analytical estimating which should never be forgotten and these will be touched upon later.

The writer has functioned in this neck of the woods (Cleveland, Ohio) as one of a committee organized for the purpose of making research into labor cost and preparing data for estimating, and therefore is interested in the discussion of Mr. Abbott's theories. He has noted with satisfaction that other men are thinking along parallel lines, and although they disagree with Mr. Abbott in some very vital essentials, yet they deem the subject worthy of due consideration.

I note in your May issue that M. P. Brown of New York directs attention to what he seems to think are very important factors for argument. If you will bear with me, I would be pleased to defend Mr. Abbott as against the argument as stated by Mr. Brown.

In the first place, fundamental principles can be used in New York as well as in St. Paul or El Paso. Mr. Brown seems to think that the "spacing" of outlets has a very large bearing upon the cost of labor. I suppose he refers to the *periodicity* of lighting outlets or the relative number of outlets in circuit runs of constant length, or the ratio of feet of conduit per outlet.

Let us see if that is so. The theory obtains (and I believe it is borne out by actual facts) that the more conduit there is in relation to outlet boxes, the less the labor cost. This would seem to indicate that *periodicity* has much to do with the cost of labor. So it has but analysis of the labor factors involved in the two major operations of "roughing-in" circuit runs would appear to indicate that Mr. Brown is arguing around in a circle.

Let me demonstrate my point: Roughing-in circuit runs consists of two major operations:

- (a) Installing conduit;
- (b) Installing outlet boxes.

There are a few minor operations, such as cutting chases, channelling, drilling, indirect labor, etc., but we will not discuss these points now.

Installing conduit consists in:

- (1) Handling material.
- (2) "Cleaning" pipe.
- (3) Transporting to approximate location.
- (4) Coupling together; securing to place.
- (5) Delays.

No bending, offsetting, cutting, reaming, or anything else other than the above is a conduit cost. I will try to explain that later.

The cost of installing ten feet of one-half inch pipe between outlets in one job is the same per unit foot as the installation cost per unit foot of twenty, fifty, or one hundred feet in another; that is, if the following conditions do not change:

- (a) *The type of construction of building, size, etc.*
- (b) *The job-index factors.*

That types and sizes of buildings offer varying degrees of difficulty to the installation of electrical material is well known, and requires not even a passing thought, other than the statement that construction costs vary according to the type and size of building construction; but the job index factor is very important in this argument. That, also, will be touched upon later.

The other major operation of installing circuit work is—installing outlet boxes or conduit bodies.

This operation consists, among other factors, of the following events:

- (a) *Handling material.*
- (b) *Spotting outlets.*
- (c) *Measuring, cutting, reaming, threading, nipping, bending and offsetting conduit.*
- (d) *Preparation of box, stud, cover, knock-outs, reaming holes, etc.*
- (e) *Securing box in place, hangers, etc.*
- (f) *Securing conduit to box; 1-2-3 or 4-pipe;*
- (g) *Inserting wooden plug, rags or paper in box and pipe.*
- (h) *Cleaning out box when ready to "finish."*
- (i) *Testing Conductors.*
- (j) *Connecting, but not soldering circuit conductors.*
- (k) *Delays, walking back and forth, consultations, etc.*

Let us go back, now, to the conduit. I said that it didn't make any difference how much pipe there was, or how little, because the outlet box is charged up for *all short-comings*. The workman could, of course, go right on and couple up pipe *forever*, or until he had run into a wall, (or got tired), if there were no outlet boxes, and therefore that cost would be less than if he had to install 6 boxes, or 8 boxes, or 10 boxes, on the way to the wall or the end of the circuit.

But if you will follow out my thought that the outlet box is to be *fined* good

and plenty for stopping or delaying the onward march of the conduit run, you, no doubt, will then agree that the "*spacing of outlets*" or *periodicity* has nothing to do with basic labor units, to be ascribed to conduit installation.

I hope I've clearly stated the point. If I haven't, I would be glad to call on anyone and explain in person.

These two major operations should be made fundamental and separate. Basic units *can* be derived by time-study methods. The writer has reams and reams of time-study data, and has listened patiently to chronic calamity howlers who say that time-study observation couldn't be done because of the (a) delays, (b) the indirect labor, (c) tearing out work, (d) consulting foreman, (e) running errands, (f) shooting crap, (g) taking a chew, (h) writing home to mother, or (i) anything else; and also that outlet boxes and conduit boxes were so closely and intimately related that they could not be separated. They evidently are staunch followers of Holy Script—"What God hath joined together, let no man put asunder"; and therefore I pass the subject as I have disproved the allegation to my own satisfaction by taking time-study observations, and fixing with data which is fundamental:

(a) The conduit will take certain fixed units per foot for each type of construction stated in feet per hour or hours per 100 feet, or, locally, in cents per foot, for each class of construction.

(b) The outlet boxes will take certain units depending upon the kind of construction. Separate units into schedules, according to the type and also number of conduits entering box. Bends, cuts, etc., charged to box.

(c) The labor should be augmented by another element which I am pleased to call the job index factor determined by actual experience and a comprehensive system of costs, taken from tables or graphs.

(d) The total will be increased by a further addition of Indirect Labor, a few of the costs of which Mr. Brown mentions in his article.

(e) Last, but not least of all, is the thought that a "job cost control system" or "making costs agree with the bid" is the next thing to think of.

Now the Job-Index Factor comes in for its share of the discussion.

I dare Mr. Brown, or any other New York estimator, for that matter, and they are all—all competent men, to work out what he is pleased to call "gross units"

if this job-index factor is not considered. Conversion factors must be derived and applied to all estimates priced upon basic principles. Each job is different. The difference in the color of the face brick oftentimes, so it seems, influences the labor cost. Gross units should be basic, otherwise they are useless.

The job-index factors and their *relative weights* follow:

(THE WEIGHTS ARE EMPIRICAL)—(TEN JOB-INDEX FACTORS)

	RELATIVE WEIGHTS:
(1) Attitude and efficiency and practical ability of general contractor	16.0
(2) Degree of symmetrical uniformity and intricacy of the work	14.0
(3) Proximity to home office supervision; (out of town work)	14.0
(4) Size of the operation factor. i. e., ratio of total size of area, susceptible to continuous development	12.0
(5) Adequacy of plans and specifications, and attitude of the owner and his agent.....	12.0
(6) Facility to obtain competent labor; stability of labor market and wages	7.0
(7) Weather conditions	8.0
(8) General conditions of the money market, transportation, and material outlook...	7.0
(9) Co-operation received from other trades	6.0
(10) Attitude of Electrical Inspectors	4.0
Total	100.0

In the event conditions on the job are sub-normal, penalize relative weights by deduction. In the event conditions are better than normal, add to relative weights by a sum equivalent to the "*abnormalcy*." These ten factors should be analyzed each in their turn. I do not maintain that the empirical weight values are final. They are tentative, and subject to change at the discretion of contractor.

It is true that a few of the factors are not subject to predetermination, but the writer believes in "playing safe" and would therefore penalize those unknown factors by at least 50 percent of their value if no favorable information is at hand by which to forecast any other result.

Suppose, for example, after close analysis, the total composite job-index factor showed 75 points. The total labor would then be divided by .75, which is *nearly* correct, but not quite. To offset this, the size and kind of a job must be taken into consideration. The writer has prepared some useful graphs and uses this composite index-factor as

an argument to enter these curves whereby a final figure is obtained, which more nearly corresponds with a true conception of what I consider a *true labor cost resulting from analytical estimating*.

After the Prime Cost has been computed, the writer applies an overhead expense which is never the same, even for two jobs of the same monetary value, unless they are exactly alike in type, etc. The only objection advanced seems to be the complexity of the estimating. I have prepared graphs, but anyone can do the job in ten minutes by the slide rule. The fact that the final result is nearly accurate and scientific is reason enough for adopting some such method. I am out of patience with the objection that the ordinary estimator cannot use it. Well then, let us train our estimators.

I don't know if I have convinced the skeptics that this plan consisting of:

- (a) *The use of fundamental units basic for all materials;*
- (b) *The deduction of conversion factors*

will tend to reduce electrical estimating to elements which are both scientific and practical, all of which I ought to say will elevate the art and business of electrical contracting to the stratum now occupied by Efficient Business, but I hope that I have given some of them food for thought.

Color Lighting Equipment

Ivanhoe Regent Works, Cleveland, Ohio, is putting on the market complete equipment for color lighting in display windows. This will be known as the Ivanhoe Rainbow Window Lighting Equipment.

Color lighting for show windows is a recent development which offers unlimited possibilities in decorative window lighting. A display window illuminated with soft color tints attracts attention, not only because it is distinctive and artistic in appearance, but also because the colors may suggest the character and the use of the goods displayed or may emphasize the predominant color of the display by harmonizing or contrasting with it.

An outstanding feature of the Ivanhoe Rainbow is the use of colored glass caps which fit over the lamp for obtaining color changes. These caps are supplied in red, amber, green and blue with which colors any desired shading or contrast may be secured. The use of

this type of color screen permits of continuous operation and frequent handling without effecting the serviceableness of the equipment.

The reflector used is a specially designed prismatic glass type of high efficiency, accommodating the 100 or 150 watt lamp.

The Field of an Estimator

By H. G. ANDERSON

From Paper Read Before Electrical Estimators' Association of New York City

An estimator, or we will say a man who estimates work in our business—and, no doubt, in many another business—has numerous duties to perform, some employers expecting more of their men in these positions than others. This is usually governed by the volume of business performed by the company.

We have the contractor who is the estimator, superintendent, ordering clerk, billing clerk, collector, etc. To succeed, I will say, he must be an all around man and a hustler.

There are some men who hold the position of superintendent and are expected to engineer, sell, operate jobs from superintending, ordering of material, billing, and to the final settlement of bills.

As the firm's volume of business grows so does its overhead. We then meet with the man who, in most cases is just expected to do estimating. We also have the engineer filling the position of estimator.

A man to perfect himself in estimating, should be fairly skillful in mathematics, should obtain a clear insight into the practical methods of application in our branch of business; should familiarize himself in building construction in general, not overlooking any branch of business, as a certain amount of the knowledge of the practices of all crafts will give him a clearer view as to the most practical methods of application in his own business.

An engineering training is most essential. A theoretical training is an absolute necessity, not necessarily a college training—but at least a selfschooling at home.

He should, at all times, keep in touch with the material market, retaining a clear idea of market values of material he handles. He should be quick in availing himself of any economic methods when taking off a job, but should never carry this to a point of detriment

to an installation. He should acquire a clear knowledge of modern business methods.

He should always take great interest in new materials placed on the market. His choice of materials when estimating work where no specific kinds are required should be such that labor costs will be cheapest in handling.

Too much cannot be said of properly and neatly arranging and preparing the estimate data sheets. Data should be so taken off and listed that it would be a lasting record for the job. It should be so recorded that at least 80 percent of all material required can be taken from these sheets without further recount or reference to plan requirements.

Outlets and various installations and apparatus should be so listed that necessary inspection reports can be made without further recount. Costs should be listed item for item and the manufacturers or supply people whose quotations are used should be plainly noted.

An estimator who can engineer, estimate, and make the necessary sale of a job, should prove very valuable to his employer and himself.

Acting in any one of these capacities, he should always advocate installations of high standard, never cheapening to win the job. Advocating the best is the upbuilding of our industry and the improving of respect by others of our particular craft.

In conclusion, I might say an estimator's field is a complete knowledge of anything electrical or anything that has any bearing whatsoever on his particular business.

Glasgow Solves Problem

Folks who believe hustle and bustle in everyday life is a characteristic confined strictly to the Western Hemisphere would do well to visit Glasgow, according to J. H. Bell, a Western Electric engineer, who has just returned from a tour of investigation of the utilities of Europe. "In all the time I was in the busy Scotch metropolis" he stated, "I never saw a street car stop at any but a few stipulated stations. At all other places, the motorman merely reduces the speed of his vehicle when he is hailed by a prospective fare and the latter makes his ascent to the platform on the fly. Men and women, young and old, have become so used to mounting the cars while they are in movement that the latter seem to be in a state of perpetual motion at all times."

•RETAILING•

A Department Devoted to Practical Suggestions that Help to Solve the Problems of Electrical Dealers

Supply Jobber Holds Lighting Show

Newark Electrical Supply Company Made Temporary Installation for Purpose

O. Fred Rost, general manager of the Newark Electrical Supply Company, the leading New Jersey electrical jobbers, wanted to have a lighting show of his own, so he fitted up the proper equipment in the company's assembly hall, and on the week of May 2, held a lighting campaign.

Commenting on the success of the event, Mr. Rost says:

"Although in previous years we have conducted campaigns to create interest in better lighting facilities for factories, the reaction was never what we felt it should be. These campaigns always were conducted during the late summer or early fall, or at a time when because of the shortening days, factory managers naturally would begin to think of their lighting equipment. We felt that greater results could be accomplished by

making the initial effort in the early summer, and then follow up all prospects during the summer months. The plans for the campaign just finished were laid with a twofold object in view:

"1. Creating a desire for more information on better factory lighting in the minds of factory managers, superintendents or electricians connected with the approximately fifteen hundred factories contained on our mailing list.

"2. To keep each contractor-dealer operating in the territory in constant touch with the progress of the campaign, and closing the campaign with a lighting demonstration to contractor-dealers, at which time they could be given full information as to what they individually might do to cash in on our effort by getting some of the wiring business which our campaign could not help but create.

"To accomplish this twofold purpose, it seemed advisable that all letters should be sent to the factories and contractors alike, thereby familiarizing

every contractor with the various arguments advanced in our mail campaign, and enabling him to follow up the mail campaign with his personal effort and solicitation."

The attendance at the lighting demonstration on May 4 consisted chiefly of factory superintendents and factory owners, while there were also a number of contractors present. The smoker and demonstration for contractor-dealers held on May 7 was only fairly attended, but all those present expressed themselves as being highly pleased with the demonstration and the lecture, and felt well repaid for coming.

W. Sturrock, engineer from the National Lamp Works of Cleveland, Ohio, was in charge of the demonstration, and delivered a very interesting and comprehensive lecture on the subject of factory illumination.

How Kids Help to Get Prospects

School Children Enlisted in Intensive Campaign to Sell Electric Appliances

The use of boys as salesmen was so successfully and spectacularly demonstrated in the early experience of the *Saturday Evening Post* that the same plan has since been utilized repeatedly and for every sort of selling. Electrical dealers have used the short pants salesmen with especially good results in marketing Mazda lamps, and any number of contests and schemes to interest children—and through the children, the parents have been put over by the electrical trade with gratifying returns.

The latest and one of the most successful plans of this sort has just been put into execution by The Electric Shop of Indianapolis. It is nothing more than a "definition contest" in which grammar school children are asked to submit a twenty-five word definition of the word *dependable* as it is applied to the electric cleaners and clothes washers handled by the Shop, but the pulling power of the scheme lies in the selection of a real, live, honest-to-goodness Shetland pony as the prize for the winner.



Assembly Hall of Newark Electrical Supply Company Showing Temporary Installation of Equipment for Lighting Demonstration

If there is a child of less than 95 years who does not fall for a pony, we have never heard of him. From pulling infants to drooling octogenarians, every panted or petticoated human being above ground wants a pony. You do yourself—though you may only admit it in the dark.

So basing its contest upon the gift of a real live pony, which was named



The Prize Pony that Interested the Kids
Royal-Thor in honor of the electrical appliances featured, The Electric Shop advertised:

TAKE ME HOME

Every boy or girl attending grade school has an opportunity of winning this pet pony with bridle and saddle.

Write not more than a twenty-five word definition of the word "dependable" as it is applied to The Royal Cleaner and The Thor Washing Machine. (Ask daddy or mother to help you.) If they do not know the dependability of the washer or cleaner ask your neighbor. Hundreds of people own them and will be glad to tell you how dependable they are. We will be pleased to furnish you with booklets that may help you.

Answers must be written neatly, not more than 25 words and brought in to 46 Monument Circle, not later than April 1st. It is very essential for you to give your name, address, age, school you attend and two good prospects that will be interested in the Royal Cleaner or Thor Washing Machine.

Contest will Close April 2nd, and the Royal-Thor pony will be presented to the winner

*Thursday, April 7th, 10 a. m.
at 46 Monument Circle. Watch
for further announcement.
Three judges will be named.*

This announcement in the form of a hand bill was distributed in front of schools during recess and before and after school sessions. The pony itself was taken along and exhibited; the children were allowed to pet it and some few were given rides; we may safely say that in thousands of little breasts was thus born a determination to own that pony.

The number of definitions submitted in the contest was 550, making 1100 prospects whose names, addresses and telephone numbers were secured. Figuring all the costs of the prize and incidentals, and remembering that the names so secured are really live, this makes a very cheap per capita prospect list.

Of course the list was followed up aggressively. The Electric Shop organized a crew of six experienced and dependable salesmen to canvass both during and after the contest—good men they were and are, as the photograph shows. They made an old fashioned house to house canvass, carrying their demonstrating machines with them, and utilizing the publicity of the pony prize contest most effectively to gain favorable opening for their sales efforts.

The final results of the campaign are as yet not known, for it will take the

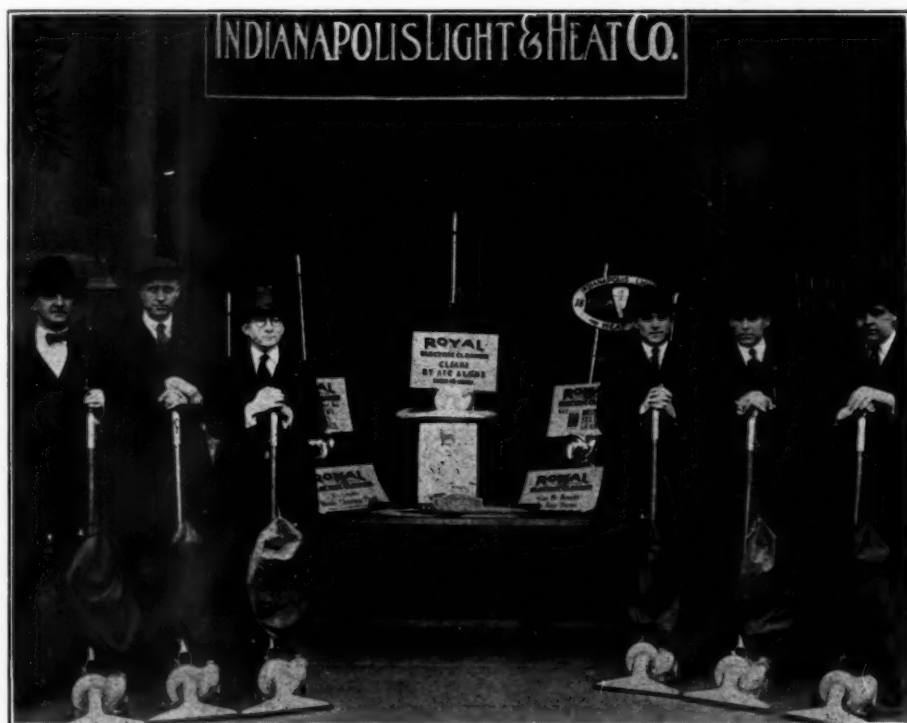
greater part of the season to thoroughly work out so large a list of prospects. However, the fact that the men are driving along at top speed and getting spectacular returns even this early in the campaign indicates that the pony can pull. The Shop has had to add two more salesmen to the canvassing crew to keep pace with the opportunity developed.

Merchandising Manual

The Western Electric Company has just issued its new Merchandising Manual, which is especially complete. It thoroughly covers every phase of retailing selling, newspaper advertising, direct-by-mail advertising, window display, preparation of mailing list, demonstration, store arrangement, etc.

In addition to explaining how to do all of these things in the most effective way, the manual shows actual samples of the various selling helps which are available to Western Electric dealers.

If, for instance, a dealer wishes to put on a clothes washer campaign he will find illustrated in this book an attractive window display which he can readily install; also a complete series of newspaper advertisements for an intensive local campaign, and all necessary material for direct-by-mail advertising. Everything is prepared in such a manner that it becomes an extremely simple matter for the dealer to make use of all forms of modern sales building methods.



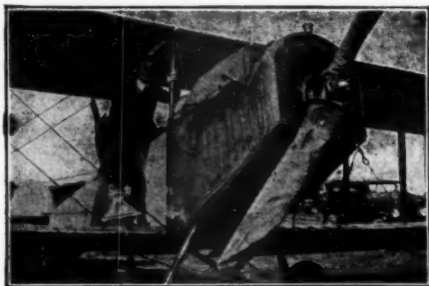
Six Sage and Sane Salesmen that Follow up the Pony Prize List Prospects

The only criticism of this valuable work is in the name. It might more appropriately be termed a Comprehensive Summary of Merchandising Knowledge, as it comprises practically all there is to be learned on the subject.

The Western Electric Power and Light Builders is another portfolio of prepared publicity which is being sent out to contractor-dealers. It is fully as interesting as the company's Merchandising Manual, written in a friendly style and full of human interest.

Modern Sky Pilot

F. M. Berry, who sells the Apex Electric Suction Cleaner down in Birmingham, Alabama, appears to be a regular



"High Flier." The camera-man caught him the other day in the act of delivering an Apex Cleaner by aeroplane, which shows that high speed methods and Berry are very good friends.

"The Apex cleans by air and is delivered by air," declares Berry. All of which, as the editor might remark, is most appropriate.

Illumination Design Data

The engineering department of the National Lamp Works of the General Electric Company has issued Bulletin 41, a comprehensive pamphlet of thirty-two pages giving exact data on the subject of illumination data.

The method of design presented in this bulletin will be found fully as simple as any of the common short cuts. It has the decided advantage that the technical considerations which are important as influencing the result and which require the experienced judgment of the engineer, having been taken into account in the preparation of the charts and tables and therefore automatically receive due allowance in the lighting design.

The data apply in interiors where standard types of reflecting equipment are used to obtain general lighting of substantially uniform intensity. There are of course certain problems which

call for special distribution of light from special types of equipment, as for example show-window lighting, train lighting, and photographic studio lighting.

Home Lighting Exhibit

The Lighting Sales Bureau of the National Electric Light Association, under the chairmanship of O. R. Hogue, decided that the Residence Lighting Exhibit will be the sole exhibit of the Lighting Sales Bureau at the convention now being held in Chicago.

The Residence Lighting Division, under the chairmanship of M. Luckiesh, prepared this exhibit. It consists of a large composite room and several booths on the mezzanine floor at The Drake. The large demonstration room is a duplicate in many respects of the demonstration room which Mr. Luckiesh has had in operation in the Laboratory of Applied Science, Nela Park, Cleveland, Ohio, for several years, but additional features have been added. Its chief aim will be to demonstrate lighting effects and their possibilities, which is in line with the broader movement of considering lighting effects as the final result rather than to consider fixtures in the usual narrow sense.

Many novelties will be introduced and special emphasis on the entire exhibit are given to the demonstration of the charm and effectiveness of tinted light.

An individual booth is constructed which shows the extensive possibilities of portable lamps in the home. Another booth takes up various features of residence lighting. The aim is not only to depict the present possibilities, but to

prophecy the future of light in the home.

Wiring diagrams on a large scale demonstrate adequately the wiring and lighting of residences. These diagrams are actual reproductions of the wiring which has been installed in various homes by those who are capable of presenting the subject to the householder in a manner which convinces him.

Effective Summer Display

By E. F. NEWKIRK

Edison Lamp Works Expert Gives Directions for Catchy Trim That is Different

To make a similar display to the one shown above have a piece of composition board 42 inches in diameter painted a warm orange yellow. On this mount the little girl holding a pin wheel.

From the outer edge of the circular piece and spaced about six inches apart attach white twine by means of pins. Run the twine to the outer edge of the fan guard, making each string taut.

Next paint black sections on the twine alternating black and white in about three inch spaces.

When the fan revolves the strings will vibrate and give the illusion of actually "seeing" the breeze blow on the girl and keep the pin wheel in motion.

This is a good attention getter and when placed with an otherwise neatly arranged display will sell both fans and lamps.

Blue colored light on the left side of the window and amber colored light on the right side gave a pleasing tone to the whole.

The sign reads: "Comfort and Economy. The current you save by using Edison Mazda lamps will help you keep cool."



Hot Weather Window Trim That Would Actually Make You Feel Cool Standing in the Summer Sun



ORGANIZATION ACTIVITIES

A Department Devoted to the Reports of State and Local Meetings



STATE CHAIRMEN AND SECRETARIES

State	Chairman	Secretary	State	Chairman	Secretary
ONTARIO, CANADA:	E. A. Drury, 164 Oakwood Av., Toronto	J. A. McKay, 110 Church St., Toronto	MARYLAND:	S. C. Blumenthal, 505 N. Eutaw St., Baltimore	C. Philip Pitt, 15 E. Fayette St., Baltimore
BRITISH COLUMBIA:	E. Brettell, 781 Granville St., Vancouver	R. H. Hargreaves, Bus. Mgr., Vancouver	MASSACHUSETTS:	Geo. B. Quinby, Boston	J. E. Wilson, 263 Summer St., Boston
CALIFORNIA:	C. L. Chamblin, 643 Call Bldg., San Francisco	J. W. Redpath, 643 Call Bldg., San Francisco	MICHIGAN:	Henry Roseberry, 41 Pearl St., Grand Rapids	H. J. Shaw, 613 Lincoln Bldg., Detroit
COLORADO:	J. Fischer, Denver	W. A. J. Gusscott, Denver	MINNESOTA:	Emil Anderson, 240 Plymouth Bldg., Minneapolis	Roy Constantine, 2395 University Ave., St. Paul
CONNECTICUT:	E. S. Francis, 272 Asylum St., Hartford	Geo. M. Chapman, 43 E. Main St., Waterbury	MISSOURI:	W. J. Squire, Kansas City	A. J. Burns, 533 Delaware St., Kansas City
DISTRICT OF COL.	Frank T. Shull, Conduit Rd. and Elliott St. Washington	H. R. Harper, 635 D St., N. W., Washington	NEW JERSEY:	Geo. E. Davis, 23 Central Ave., Newark	Elmer D. Wilson, Newark
FLORIDA:	T. E. Satchwell, Jacksonville	J. C. Spencer, Palatka	NEW YORK:	F. A. Mott, 29 St. Paul St., Rochester	J. P. Ryan, 26 Cortlandt St., New York City
GEORGIA:	Henry Morton, 1227 Broad St., Columbus	C. B. Anderson, Walker El. & Plain. Co., Columbus	OHIO:	C. M. Beltzhoover, 4th and Plum Streets, Cincinnati	Walter B. Keefe, 939 E. McMillan St., Cincinnati
INDIANA:	A. B. Harris, Gary	A. I. Clifford, 309 N. Illinois St., Indianapolis	OREGON:	Roy C. Kenney, 388 Burnside St., Portland	F. R. Whittlesey, 212 Henry Bldg., Portland
IOWA:	Louis L. Corry, 510 Brady St., Davenport	F. Bernick, Jr., 208 High Ave., W., Oskaloosa	PENNSYLVANIA:	R. W. Keck, Allentown	M. G. Sellers, 1518 Sansom St., Philadelphia
KANSAS:	R. M. Sutton, 125 N. Market St., Wichita	H. S. Lee, 816 Kansas Ave., Topeka	TENNESSEE:	P. W. Curtis, Chattanooga	J. A. Fowler, 10 S. Second St., Memphis
LOUISIANA:	C. S. Barnes, 513 Gravier St., New Orleans	R. S. Stearnes, 336 Camp St., New Orleans	WASHINGTON:	S. G. Hepler	Forrest E. Smith, 205 Boston Block, Seattle
			WISCONSIN:	B. L. Bardick, 72 Water St., Milwaukee	H. M. Northrup, 25 Erie St., Milwaukee

LIST OF LOCAL ASSOCIATIONS AND MEETINGS

State and City	Local Secretary	Street Address	Time of Meet.	Place of Meet.	State and City	Local Secretary	Street Address	Time of Meet.	Place of Meet.
ALABAMA					NEW JERSEY				
Birmingham			Mon. Noon	Hillman Hotel	Atlantic City	F. P. Wright	16 Ohio Ave.	1st Thursday	Malatesta Hotel
Mobile	E. J. Huguonot		Fri. 5:30 p. m.	Members' Offices	Jersey City	Wm. Doellner	743 Bergen Ave.	1st Monday	P. S. Bldg.
CALIFORNIA					Newark	Geo. E. Davis	23 Central Ave.	Last Friday	23 Central Ave.
Berkley	J. M. Gregory	Pacific Bldg.	Fri. 8 p. m.	Pacific Bldg.	Paterson	H. M. Desaix	88 Ellison St.		P. S. Bldg.
Covina	F. Rambo	308 E. 4th St.	1st & 3rd Mon.	Ontario	New York				
Long Beach	O. W. Newcomb	628 U. Oil Bldg.	Tues. Ev'g.	Spaulding's	Albany	E. A. Jones	31 Hudson Ave.	1st Thursday	Pekin Rest'nt
Los Angeles	H. T. Muxall	Pacific Bldg.	Tues. 8 p. m.	Denver	Binghamton	A. H. Hyle	12 Nevins St.	1st Mon.	Cham. Com.
Oakland	J. Gregory	165 Jessie St.	Wed. 1:30 p. m.	Pacific Bldg.	Brooklyn	H. W. Walcott	555 Wash. St.	Fridays	507 Elec. Bldg.
San Francisco	A. Elpins	165 Jessie St.	Tues. 6:30 p. m.	165 Jessie St.	Buffalo	E. P. McCormick	Oncenta	3d Tues.	Vanon
Van Nuys	Los Angeles Assn			Pin Ton Cafe	Cooperstown	B. B. St. John	Binghamton	Tues.	Cham. Com.
COLORADO					Endicott	A. H. Hyle	309 Main St.	3d Mon.	Migra. Ass'n.
Denver	L. B. Roberts	227 Coronado Bldg.	2d & 4th Tues.	227 Coronado Bldg.	Jamestown	Henry Lund			
CONNECTICUT					Kingston	M. C. Rivenberg	Huntington		
Hartford	H. D. Hitchcock	45 Preston St.	Call of Sec'y	118 Asylum St.	Nassau-Suffolk	J. A. Palmer	Tottenville		
New Britain	F. Mulvehill	Conn. Lt. & P. Co.	Monthly	192 Grand St.	New Brighton	E. L. Taylor	26 Cortlandt St.	1st Thurs.	Penn's Hotel
Waterbury	A. S. Jordan			Dewey Hotel	N. Y. Sec. No. 1	J. P. Ryan	22 Chambers	1st and 3d Wed.	McAlpin Hotel
DIST. COL.					Independent	John Perass			
Washington			2d Thurs.		Sec. No. 3	L. F. Lwedecke	260 W. 86th St.	2d & 4th Wed.	226 W. 58th St.
			ca mo., 8 p. m.		Ass'd. El. Con.	H. S. Beidelman		3d Thursday	Builders' Exch.
FLORIDA					Oncenta	B. B. St. John	State St.	Mon. 6:15	
Jacksonville	W. L. Joseph	155 E. Forsyth	1st Tuesday	208 Realty Bldg.	Rochester	Theo. Benz	McClellan St.	Subject to call	
Miami	C. E. Pullen	Pullen-Zoll Co.			Schenectady	Mr. Spengler	P. O. Box 809	1st & 3d Monday	Gas Office
ILLINOIS					Syracuse	H. N. Smith	First St.	Monthly	Elks' Club
E. Moline	E. J. Burns	Rock Island	2nd & 4th		Troy	H. W. Boudey	Gray Elec. Co.	3d Fridays	Utilities Bldg.
Chicago	J. W. Collins	179 W. Wash- ington St.	Wednesday	Arcade Bldg.	Utica	Mr. Hall	White Plains	Monthly	
E. St. Louis	O. J. Birmette	Ed. Blaine	Sat. 2 P.M.	Post Hall	Westchester	I. W. Austin	Roth Block		
La Salle	E. J. Burns	219 18th St.	1st & 2nd Tues.	219 18th St.	Watertown	L. B. Smith	Westbury		
Rock Island	E. J. Burns	613 Tyler St.	1st & 3rd Mon.		Woodmere	Geo. La Salle	Manor House Sq		
Streator	Wm. Schroder				Yonkers	Mr. Mayer			
INDIANA					OHIO				
Evansville	C. E. Jett	570 Washington	Wed. noon	Y. M. C. A.	Akron	L. C. Wall	12 S. High St.	Tues. 3 P. M.	Elec. Co.
Gary	A. B. Harris	29 S. Capitol	1st & 3rd	Commercial	Cincinnati	W. R. Keefe	939 E. McMillan	1st & 3d Thurs.	Cham. of Com.
Indianapolis	G. L. Skillman	Ave.	Thursday	Club	Cleveland	Geo. D. Biery	E. 95th St.	2d Wed.	Builders' Exch.
Warsaw	F. E. Strauss	120 W. Market St	Wed. Ev'g.		Columbus	O. A. Robbins	Erner Hopkins	2d & 4th Fri.	Nat. Ex. Bank
IOWA					Springfield	J. R. Yost		1st Wed.	New China Res.
Davenport	E. Burns	Rock Island	2d & 4th Mon.	Rock Island	Staubenville	D. C. Hartford	Hood Elec. Co.	Mon. 6 P.M.	
Waterloo	J. A. Harleip	Care Waterloo			Youngstown	W. Wesbeck			
KANSAS					OREGON				
Topeka	H. S. Lee	816 Kansas Ave.	Mon. Noon	Elk's Club	Portland	F. R. Whittlesey	212 Henry Bldg.	2d & 4th Monday	Cham. of Com.
KENTUCKY					PENNSYLVANIA				
Paducah	W. R. Kitterjohn		Last Thurs.		Allentown	A. Hill	Bethlehem	Monthly	
LOUISIANA					Bethlehem	A. H. Hill	510 W. Main St.		
New Orleans	R. S. Stearnes	336 Camp St.	1st Weds.	Teocalli Hall	Catsaugus	W. T. Kleppinger		Last Thursday	
Portland	H. T. Boothby	222 Middle St.	1st Mon.		Dubois	C. E. Blakeslee	Bethlehem	Monthly	
MARYLAND					Easton	G. E. Hill	Bldrs. Exch.	Monthly	Bldrs. Exch.
Baltimore	C. P. Pitt	15 E. Fayette	1st & 2d Tues.	Elk's Club	Erie	Earl Stokes	1518 Sansom St.	3rd Friday	Und'w'trs Office
MASSACHUSETTS					Lancaster	A. Deen	10 N. Diamond	2nd Thurs.	Builders' Exch.
Boston	J. E. Wilson	263 Summer St.	3d Thurs.	Boston City Club	Philadelphia	M. G. Sellers	Bd. of Tr. Bldg.	Tues.	Zenke's
Fitchburg	R. M. Gowell	24 West St.	1st Mon.	Fay Club	Pittsburgh	Geo. Burrows	Dubois	2d & 4th Tues.	
Haverhill	H. W. Porter	681 Main St.	2d Mon.	El. Lt. Sta.	Scranton	A. J. Fowler	E. King St.		
Worcester	L. H. Treadwell		2d Thurs.	44 Front St.	St. Marys	C. E. Blakeslee			
MICHIGAN					Columbia	A. E. Harris			
Detroit	H. Shaw	613 Lincoln Bldg	Last Thurs.	G. A. R. Hall	Greenville	E. L. Cashion	Sumter, S. C.		
Flint	J. Markle	718 S. Saginaw	Tues. Noon	Ass'n of Com.	Tennessee	E. C. DeBruhl	Ideal Elec.	Wednesday	Manhattan Cafe
Grand Rapids		Exch. Place		Cham. Com.	Chattanooga	Carl Schneider	412 Kirby Av.	Noons	Rwy. Lt. Co.
Kalamazoo	M. Randall				Knoxville	H. M. Moses	615 Market St.	Monthly	Allyn Cafe
MINNESOTA					Memphis	H. A. Street	285 Madison Av.	Ev. other Wed.	Tulskie Hotel
Duluth	Alfred L. Foster	210 W. 1st St.	1st Tuesday		Nashville	J. B. Muller	Arcade	1st & 3d Wed.	
Minneapolis	Roy Constantine	2395 University	2d & 4th Tues.	Builders' Exch.	TEXAS				
St. Paul		2395 Univer. Av.	6:30 P. M.	Elk's Club	Dallas	P. B. Seastrunk	Lepacombe	Wed. 8 P.M.	1805 Main St.
MISSOURI					VIRGINIA		Elec. Co.		
Kansas City	Mr. Brown	809 Delaware	Tues. Evenings	University Club	Norfolk	K. D. Briggs	Arcade Bldg.	Wednesdays	Old Col. Cld.
St. Louis	A. J. Dunbar	Frisco Bldg.	Wed. Evening	Am. Hotel	Richmond	W. A. Cutlett	Jeff. & Grace Sts		
NEBRASKA					WASHINGTON				
Omaha	T. Mustain	315 Neville St.			Seattle	T. C. Smith			
NEW HAMPSHIRE					WISCONSIN				
Portsmouth	F. C. Hatch	Kittery	2d & 4th Wed.		Madison	Otto Harloff	602 State St.	1st Fri.	Fuller Op. Ho's
					Milwaukee	H. M. Northrup	25 Erie St.	2nd Tuesday	Maryland Hotel
					CANADA				
					Toronto	J. A. McKay	110 Church St.	1st Thur.	Bd. of Trade
					Vancouver	H. R. Hargreaves	Pacific Bldg.		

Associations can secure listings here by sending necessary data to the National office

Montana State Association Holds Convention

By R. J. COBBAN

Get Together Meetings During Electrical Week in Butte in Which All Interests Participate and Promote Welfare of Electrical Industry

All branches of the Electrical Industry in the State of Montana met in Butte from April 12, to 16, in an effort to promote the best interest of the industry as a whole. Twenty-five branch managers, operating heads, commercial men of the Montana Power Company, met in conference at the home office, Wednesday, April 13, for the purpose of discussing operating problems, merchandising of electrical appliances, betterment of service and other matters of particular interest to the central stations. The Montana State Association of Electrical Contractors and Dealers held their Second Annual Convention in the Finlen Hotel, April 14, 15, and 16. Out of a total membership of thirty-five active members and five associate members, consisting of jobbers and manufacturers, thirty-two active members and five associate members, were in attendance.

On the afternoon and evening of April 14, all of the delegates to the Montana Power Company's conference, and the delegates and guests of the Electrical Contractors and Dealers' Association, were guests at the General Electric Merchandising Conference, conducted in the Chamber of Commerce rooms under the direction of A. D. Page, sales manager of the Edison Lamp Works, where a very interesting, instructive and diversified program was given. Mr. Page stated after the conference that the percentage of members in attendance from all branches of the electrical industry was better at Butte than at any other city so far visited on the trip, which showed a real live interest in the various problems now before the electrical industry.

On the afternoon of April 15, Samuel Adams Chase, special representative of the Westinghouse Electric and Manufacturing Company, was the principal speaker at the convention of the Montana State Association of Electrical Contractors and Dealers. The branch managers, operating heads, and commercial men of the Montana Power Company, were invited to attend the meeting, and many availed themselves of the opportunity.

Mr. Chase spoke on Harmonizing the Industry, Better Wiring, and Better Merchandising. In his opening re-

marks he paid a high compliment to W. L. Goodwin, and expressed his regrets that Mr. Goodwin could not attend the convention, due to the fact that he has recently taken up new activities with the Society of Electrical Development. Mr. Chase said: "It was Bill Goodwin who first turned on the searchlight in the electrical industry; he pointed out the difficulties of the past and showed the way to harmony."

Mr. Chase made a plea for better understanding between the members of all branches of the industry, including contractors, dealers, jobbers, manufacturers, and central stations, emphasizing the necessity for harmony and constructive competition instead of destructive competition, and urged the adoption of the motto: "Live and Help Live", so that all branches of the industry, large or small, may work together for the betterment of the industry as a whole.

Many difficulties of the past were due to the lack of serious thinking, lack of proper understanding of each other's objects and motives, and lack of education on the part of the consuming public. He pointed out that in the past it has been difficult for the housewife to use electrical conveniences, due to the lack of convenience outlets. He estimated that not more than one house out of ten thousand is now provided with sufficient convenience outlets, and stated that if only one outlet with one additional electrical appliance were added in each home now wired for electricity, the total added revenue to the contractor, dealer and central station, would amount to two hundred million dollars per year.

Mr. Chase dwelt at length on the question: Shall the central station companies discontinue their retail business in electrical appliances? He summed the matter up in these words: "Central stations have been pioneers in the sale of and distribution of incandescent lamps and that channel was marked with beacons of free renewals and cut prices, during the industry not to a haven of safety but to a rock bound coast of disaster."

"Now the channel has changed to the jobber, contractor-dealer, and central station, with the percentage clearly

marked with beacons of ethical merchandising and intensive selling, producing absolute fairness in competition between the competing groups—and the contractor-dealer with a well located, attractive retail store, now plays an important part in the channel of distribution of lamps from the manufacturer to the consumer.

"The flat iron, washing machine and vacuum cleaner and other household appliances were introduced principally by the central station who did the pioneer work on these appliances as well as on lamps, and it is my belief that the central station on account of its organization, prestige, financial responsibility and desire to add kilowatts to its lines, will always be the logical pioneer and pilot the way for the jobber and contractor-dealer on household current consuming devices, and it would be very unfortunate to the manufacturer and to the consumer if the central station should go out of the retail business properly conducted on an ethical basis. Most central stations will always carry the introductory or development expense of placing new current consuming devices on the market. It is therefore up to the contractor-dealer to cooperate with the central station and take full advantage of the demand created."

Referring to the activities of the National Contractor-Dealers' Association, Society of Electrical Development, and the cooperation given by the large manufacturers and the electrical press to bring about harmony in the industry, Mr. Chase said: "We frequently hear it remarked: 'What does the General Electric Company get out of this? What does the Westinghouse Company get out of this?' Here's my answer: Living is giving—all life is an interchange—you get back only what you have given—business in the last analysis is service and service is only another name for giving."

Mr. Chase then read a message from O. H. Caldwell, editor of Electrical Merchandising, New York City, as follows:

"Dear Mr. Chase:

"I am mighty glad that you are attending the meeting of the Montana Association of Electrical Contractors and Dealers, and only regret that ap-

pointments in this part of the country prevent me joining you on your trip to that wonderful section.

"I have been very anxious to bring to the attention of the Montana electrical people the idea of the home electric campaign, which is being carried out with such signal success in every section of the country. It seems to me that this "home electric" campaign is a master business development plan for the electrical industry for 1921—a plan that ties together the electrical industry and many other lines of business, including the great real estate interests and the newspapers, in the common purpose of getting houses built, getting them electrically equipped, and then getting them sold to delighted purchasers.

"The home electrical idea does not consist merely in installing a complete electric appliance outfit in a dwelling and letting it go at that.

"The home electrical idea means an aggressive sales campaign in a local community, which gets houses wired in bunches, and wired completely, which demonstrates to hundreds of thousands of the public the convenience and economy of electrical devices, and which enlists the help of the powerful estate interests to sell the electrical idea to the public, and particularly to home buyers.

"Here's the way the idea is worked in California, where already it has been successfully demonstrated to 150,000 visitors in San Francisco, Los Angeles, Sacramento and other places:

"A committee of electrical men calls on a local home builder who is putting up houses in a desirable section of the town and proposes that one of these houses be wired with a full set of convenient outlets, etc. And, by the way, they put thirty-six to forty outlets in an eight-room house in California. When ready, this house is equipped complete with furniture, electrical appliances, clothes washer, dishwasher, range and all other devices that make it a complete home electrical. But that's just the beginning.

"Next, news articles and advertisements appear in the local papers, explaining that the wonderful model home electrical in the new Love Nest Addition of the town will be thrown open for public inspection for two weeks or so, during which time everybody is invited to come out and see it. A committee of electrical men is on hand at the house to demonstrate the appliances and answer questions. Advertisements are also run in the papers by the real estate people, daily stirring up new interest. In the California in-

stances the result almost invariably has been that—

(1) *thousands of people have come out to inspect the new houses for each one couple that would have inspected an ordinary real estate development;*

(2) *The "home electrical" itself, complete with everything, was usually sold outright the first day or two;*

(3) *The neighboring houses and lots were rapidly disposed of; and*

(4) *Thousands of people were introduced to a practical demonstration of electric conveniences.*

"This home electrical idea then, is a campaign plan that offers tremendous wiring and appliance development possibilities right now in every community.

"Two hundred such homes should be equipped and opened for public inspection in American cities in 1921. This would be more, we think, than any other single idea to swell the volume of house wiring and appliance sales this year.

"I sincerely hope that our good Montana friends will find it possible to start



Officers of Montana State Association of Electrical Contractors and Dealers—From Left to Right: A. A. Nicolaus, Billings, Director; J. C. Currah, Helena, Past President; J. H. Mills, Great Falls, President; Frank R. Venable, Butte, Secretary-Treasurer; O. C. Langstadt, Butte, Director; E. Shelley, Livingston, Vice President; R. G. Marsden, Havre, Director. Joseph Olsen, Great Falls, is also a Director, but not in Photograph

several home electric campaigns in Butte and other cities during 1921, and again want to express my regret that I cannot met with both you and the Montana Association."

In conclusion Mr. Chase said: "I like to compare the electrical industry to a large orchestra—all must play their parts to produce harmony and all must follow the leaders. Join in with the National Association and lend your support to their efforts to develop a better and larger industry."

During the week the Westinghouse merchandising show, as well as exhibits of many other manufacturers were visited by practically all the delegates in attendance at the convention, and many took home ideas and suggestions which will be valuable in increasing the merchandising end of their business.

The outstanding feature of the deliberations at the business session was the adoption of a resolution making central station, either private or municipal, eligible to membership in the association, and a copy of the resolution will be presented to all companies eligible to membership in the association, and a copy of the resolution will be presented to all companies eligible to membership with an invitation to join the association. It is hoped that many not now members of the association will become members before the next convention so as to lend impetus to the constructive program undertaken.

Realizing the necessity of making electricity more servicable in the home and making it more convenient to use the various electrical appliances in the home, a resolution was adopted inviting the Montana State Association of Architects to coöperate with the Electrical Contractors and Dealers, and invited the State Association of Architects to send a delegation from their membership to attend the next convention of the Electrical Contractors and Dealers. A committee has been appointed to confer with the State Association of Architects and it is hoped that good results will follow closer coöperation of the two associations.

At the business session Saturday morning, April 16, various resolutions were adopted, the election of officers for the ensuing year took place, and the following officers were elected:

President, James H. Mills, Great Falls; Vice president, Ernest Shelley, Livingston; Secretary-Treasurer, Frank R. Venable, Butte. Directors: Joseph Olsen, Great Falls; R. G. Marsden,

Havre; A. A. Nicolaus, Billings; O. C. Landstedt, Butte.

The week ended with a banquet Saturday night at the Silver Bow Club, where members of all of the Electrical interests were guests of the Montana State Association of Electrical Contractors and Dealers. Under advice of counsel the account of the banquet has been censored due to questionable compliance with provisions of the Volstead Act.

All guests and members in attendance are looking forward to the next convention which will also be held in Butte, realizing that a tremendous good has been accomplished during the short time the Association has been organized and knowing that there is much good work yet to be done.

Wisconsin Meeting

The quarterly meeting of the Wisconsin State Association of Electrical Contractors and Dealers was held at the Sherman Hotel in Appleton on April 22 and 23, attended by the Executive Committee and thirty members.

Routine business was transacted, the most important of which was the revision of our schedule of dues, which were lowered approximately fifty percent.

The Association then voted to secure Laurence W. Davis, special representative of our National Association, to work with us for a month, in a drive for new members.

At the banquet held Friday evening Mr. Davis gave us a very interesting and instructive talk regarding the activities of the National organization. Applications for membership were received from eight visitors present at the close of this talk.

It was decided that our summer outing be held on July 9, 10 and 11, which will consist of an auto trip to the chain of lakes located near Waupaca. Here our headquarters will be made. A steamboat will be hired for a trip up the Wolf River for the second day, and the third day will be devoted to pleasure and business at the lakes.

H. M. Northrup,
Secretary.

Ohio State Convention

Will be Held in Toledo, July 18, Then to Buffalo by Boat

The Ohio State Association of Electrical Contractors and Dealers are planning for a big combination state convention, outing, and trip to the Anniver-

sary Convention at Buffalo, all during the same week.

First, the regular state convention will be held in Toledo, Ohio, on Monday, July 18; then on Tuesday, July 19, the convention body will take passage on a lake steamer bound for Buffalo, where the party will join in the festivities provided for the attendants of the annual convention of the National Association of Electrical Contractors and Dealers.

It is planned to hold an informal session of the state meeting on board the steamer enroute on Tuesday, July 19. Boat reservations have been provided for fifty and it is hoped that members will take advantage of the opportunity to participate in this fine outing.

An invitation has also been extended to the Indiana State Association to join the Ohio delegation in the steamer trip, and it is more than likely that many of the Indiana members will make reservations to this end.

Marvin W. Hansen, 34 Eleventh Street, Toledo, Ohio, is chairman of the committee in charge of arrangements, and those who are interested should lose no time in making reservations.

Activities in Boston

New Organization Formed for Purpose of Increasing Interest in Electric Lighting

Largely due to the earnest endeavors of James E. Wilson, the efficient secretary of the Boston Local, as well as the Massachusetts State Association of Electrical Contractors and Dealers, electrical interests are becoming more closely affiliated than ever in the Bay State.

The latest and what appears to be the most practical means of coöperation is the establishing of an organization called the Bureau for Better Illumination, which is to work under the direction of the Massachusetts Institute of Technology.

The Bureau is sponsored by the electrical interests, consisting of manufacturers, central stations, supply jobbers, and contractor-dealers, all of these branches having joined together to demonstrate to the public the uses of things electrical.

The officers of the Bureau are H. F. Wallace, a member of the Illuminating Engineering Society and Boston representative of the Edison Lamp Works, chairman; James E. Wilson, known to all New England as an electrical enthusiast, secretary and treasurer.

Mr. Wilson is at present busily engaged in arranging to have installed in the Rogers Building of the Massachusetts Institute of Technology, 491 Boylston Street, Boston, a complete industrial lighting exhibit. It will show what proper lighting is and what it can accomplish.

The object is first to install a practical demonstration that will interest the business man and present the proposition to him in a manner that he can readily understand. The Bureau will be in a position to follow up this campaign with home lighting exhibits and other practical means of selling the electrical idea to the public.

Organize in Mississippi

First Regular Convention to be Held in Gulfport Next Month

The Mississippi Electrical Contractors and Dealers Association was organized on May 9, at a meeting held in the Board of Trade rooms, Jackson, Miss. Judge O. B. Taylor, president of the Jackson Board of Trade, welcomed them to Jackson on behalf of the Mayor who was unable to attend.

J. M. Fried was elected by acclamation as temporary chairman and A. H. Jones temporary secretary. W. R. Herstein, Electric Supply Co., Memphis, Tenn., G. H. Wygant, Gulf States Electric Co., New Orleans, La., and T. B. Cabell, Cabell-Irby Company, Jackson, Miss., addressed the meeting and made valuable suggestions for the organization of a permanent association.

Messrs. J. D. Lanham, E. K. Ford, A. H. Jones, C. J. Gates and J. M. Fried, were appointed as a committee on constitution and by-laws. They adjourned at 11 a. m., to give the committee time to draw up a constitution. At 1 p. m., the association was entertained at a luncheon at the Bon Ton Cafe, by the Cabell-Irby Company. Dr. W. H. Frazier, president of Belhaven College, entertained the gathering with reading in negro dialect and addresses were made by others present.

At 2 p. m., all the delegates present met at the Board of Trade rooms where a permanent organization was effected. Carl J. Gates of Gulfport, Miss., was elected president, J. M. Fried, Vicksburg, Miss., vice president, and A. H. Jones, McComb, Miss., secretary treasurer. Gulfport was selected as the first convention place, the date being July 25 and 26.

In the evening the Gulf States Electric Co., New Orleans, and the Electric

Supply Co., Memphis, were hosts at a banquet at Frankinson's. Following the banquet the association went to hear the Fiske Jubilee Singers at Millsaps College as the guests of the Cabell-Irby Co., Jackson.

Those attending the convention were: Carl J. (shorty) Gates, Gulfport; A. H. Jones, McComb; J. M. Fried, Vicksburg; Luther Magee, Brookhaven; Morris Slay, Hazelhurst; Lonnie Graves, Hazelhurst; W. S. Johnson, McComb; F. Johnson, Meridian; W. G. Carmen; Yazoo City; J. D. Lanham, Greenwood; G. H. Wygant, New Orleans; W. R. Herstein, Memphis; N. H. Spindler, Memphis; T. W. Musgrove, New Orleans; C. D. Jennings, New Orleans; C. L. Dunstedter, New York City; H. D. Veasey, New Orleans; H. H. Blakeslee, New Orleans; W. C. Powe, Newton; T. B. Cabell, Stuart Irby, R. O. Jones, J. C. Donovan, W. W. Donovan, E. W. Cook, P. Erskine Irby, J. Newman McCammon, G. I. Lee, E. K. Ford, J. L. Fatheree, all of Jackson.

State Meetings at Buffalo

Pennsylvania and New York Will Both Hold Semi-Annual Conventions During Week of National Association Meeting

The Executive Committee of the Pennsylvania State Association of Electrical Contractors and Dealers, at a recent session in Philadelphia, completed arrangements for holding the semi-annual meeting of the Association at the Lafayette Hotel, Buffalo, New York, July 19, 1921, in connection with the National Convention which immediately follows.

As the sessions of both the state and national associations will be of unusual interest, the officers of the Pennsylvania Association expect a large attendance and have, therefore, provided a special room at the Lafayette Hotel as headquarters for the Pennsylvania State representation through the entire period of the convention.

The New York State Association will also hold a meeting on the same date and place, and a joint acquaintanceship session will be arranged if possible.

Pennsylvania Legislation

House Bill No. 787, drafted by the Pennsylvania State Association to exempt electric appliances, leased or hired, from levy or sale on execution or distress for rent, has finally passed both House and Senate, and has been forwarded to the Governor.

What Metropolitan District Should Do

BY A. GREENBLATT

Secretary of Greater New York Estimators' Association Observes One Important Omission at Gathering

On the occasion of the semi-annual meeting of the Metropolitan District Association, held on May 17, 1921, in the auditorium of the Consolidated Gas Company building, the audience, composed of the electrical contractor-dealers of that district were cajoled, criticized, encouraged, advised, informed, and otherwise subjected to a great deal of talk on a great variety of subjects—except estimating.

Handsome L. L. Strauss was the toastmaster and you couldn't help but read the sincerity of purpose in all of his little remarks when introducing the speakers.

Workers J. P. Ryan, secretary of the district Association, told them how the Metropolitan District was encouraged by their coöperation and asked them to keep it up.

Manager W. H. Morton of the National Association prophesied what is going to take place at the National Convention in Buffalo this year.

Generous Arthur Williams of the New York Edison Company spoke on the necessity of electricity in general and urged them to coöperate with him in a general advertising campaign to boost business.

Learned H. S. Wynkoop, chief inspector of Greater New York, told them of his difficulties in trying to change the Code for their benefit.

Beloved Joseph Forsyth of the New York Board of Fire Underwriters told them of how the insurance company is attempting to boost their business by making reinspections of old equipments.

Wise W. P. Belknap of the Bankers' Trust Company, gave them a little outline of business conditions in general and told them approximately when business would get back to normal.

And last but not least, energetic Bill Goodwin of National fame, and now with the Electrical Development Society told them of the many ways in which to boost business and particularly urge them to take advantage of Mr. Williams' offer of coöperation.

The writer was one of the audience, and enjoyed it all immensely, but, like any other almost human creature who has a hobby and is enthusiastic about it, almost jumped out of his seat with

anxiety to say something on his subject—Electrical estimating. It was, of course, too late to be arranged and he had to content himself with imagining what he would have said had he been called upon to say it.

The following is an outline of his imagination:

Chairman and Gentlemen: I was very much interested in what Mr. Belknap said on returning to normal business conditions, and I suppose you too, found this subject more absorbing than any of the others touched upon this evening. We are all anxious to return to normal conditions.

Suppose we had normal conditions now? Unless your conception of such a condition is very much different from those we enjoyed before the war, we will have to contend with that necessary evil of estimating again; but the war has taught us many a lesson, among them the one that our estimating at that time was simply "punk." If you are satisfied to continue estimating as you did before, I have nothing more to say to you. If you want to improve those methods, you are asked to coöperate in this work as well as in all the others spoken of this evening.

A. L. Abbott of St. Paul, in articles on the subject that appeared in the *ELECTRICAL CONTRACTOR-DEALER* in December and January, has outlined a very clear and scientific method of estimating electrical and construction work. The New York Electrical Estimators' Association has adopted different methods; both have their merits and demerits. Either can stand further developments if properly studied.

I would have you all asleep were I to attempt to describe these methods to you now. They have both been fully discussed in the *Contractor-Dealer Magazine*, but I do wish to say this: In order to arrive at any scientific basis of estimating we must first know our costs.

Some two years ago the National Association through its cost accounting committee proposed to engage a firm of accountants to gather records directly from the jobs. If I remember correctly the association figured it would cost about seventy-five hundred dollars to accomplish the feat, and from the outline of the plan proposed at that time as I now recall it, I don't think it would have been of much use after completion. The National Association asked the various contractors to contribute toward the expense and the plans fell through.

The New York Electrical Estimators

Association is now preparing a much simpler system, which to my mind will accomplish much more satisfactory results and will cost practically nothing.

I am referring to the methods propounded by Mr. Higgins in his article on the subject in the May issue of the *ELECTRICAL CONTRACTOR-DEALER*. If you have not as yet read that please do so at your earliest possible convenience. The New York Electrical Estimators' Association is getting up books for the purpose of entering records of cost or time spent on the various operations that enter a job. The method is simple and would not take over three minutes daily of a man's time on the job and I am sure the results will be worth a good deal more and besides give us a basis for figuring future work.

The books are now in preparation, their cost will be very small. If you want any we will be glad to supply them. I thank you.

Get Together Meetings

Samuel Adams Chase, special representative of the Westinghouse Electric & Manufacturing Company has again been very actively engaged in the electrical industry welfare work recently. Before his illness he accompanied Wm. L. Goodwin on his good will tours and



Samuel Adams Chase

helped to spread the gospel of coöperation throughout the industry.

After returning from the state meeting at Butte, Montana, in April, Mr. Chase has been doing some special work in Greater New York and vicinity. On

April 25 he was the speaker of the evening at a get together meeting of the Kilowatt Club of Brooklyn, New York; a similar meeting was held on April 28, in Long Island City, where Mr. Chase addressed the Watthour Club; on May 6 he talked to employees of the commercial, engineering, and power departments of the United Electric Light & Power Company of New York City.

Mr. Chase talks on the subjects of harmony in the electrical industry, better wiring, and the necessity of additional convenience outlets. His familiarity with these topics and his earnestness never fail to arouse the intense interest of his audiences.

Society for Electrical Development

W. W. Freeman, president of the Society for Electrical Development, announces that at a meeting of the Board of Directors of the Society held in New York on May 10. James M. Wakeman tendered his resignation as general manager, which was accepted effective as of September 1, and leave of absence granted from June 1.

Mr. Wakeman has served as general manager of the Society from the commencement of its activities, and has rendered most valuable services to the Society and the industry in that capacity.

The directors are unanimous in their expression of regret that Mr. Wakeman finds it necessary to withdraw from the executive direction of the Society's activities, and their heartiest wishes will follow him into his future field of efforts. A committee was appointed to draw up a suitable resolution to express the appreciation of the directors.

The resolution which the Committee drew, and which was passed unanimously, read as follows:

"The Board of Directors of The Society for Electrical Development, in accepting the resignation of James M. Wakeman, its general manager from the date of its organization, desires to enter on the minutes its full recognition and appreciation of the very valuable, comprehensive and enthusiastic work given by him to the Society.

"Mr. Wakeman has been constant and industrious in his efforts, and has won for himself not only the sincere commendation of the Board as a whole for the conscientious and able performance of his duties, but is entitled to and re-

ceives the personal respect, esteem and good wishes of every member.

"The standing and influence of the Society today is to be largely attributed to the splendid and faithful efforts of Mr. Wakeman, and the directors of the Society take pleasure in so stating as part of the minutes of this meeting."

Effective June 1, William L. Goodwin, assistant to the president, will assume charge of both the office and field activities of the Society.

Regulating Ordinances

By J. P. RYAN

**Secretary of New York State Association
Believes Such Legislation Should be
Seriously Studied**

The publication in the Electrical Review of April 9, of the proposed Chicago City Ordinance to regulate the sale, installation and use of electrical devices together with the editorial comment should, it seems to me, have a tendency to impress the electrical industry with the importance, not to say the dangers, of this class of legislation to the electrical industry, and the following extract from the minutes of a meeting of the Board of Managers of The New York State Association of Electrical Contractors and Dealers, held in Albany on April 13, 1921, will, it is hoped, have a tendency to concentrate the attention of the industry on conditions with which they seem to be confronted, which should have serious consideration:

"The reports submitted by the members present and by the secretary indicated considerable activities in various districts with a view to legislation by the municipalities relative to licensing electrical contractors. The subject in various forms is now under consideration in Binghamton, Buffalo, Rochester, Syracuse, Watertown, Yonkers and New York City. Information available would indicate that no two districts or municipalities are considering similar arrangements, and it is to be feared that if this important subject is handled in this miscellaneous way, that it will result in a welter of rules and regulations which will be contradictory, and obviously embarrassing to contractors in attempting to execute work in different localities which will essentially result in retarding our important and growing industry, and will undoubtedly have a tendency to bring about municipal inspections which will be a duplication of the present inspection system and result

in controversies over the interpretation of rulings which will inevitably cause delays and expense to contractors in the execution of their work.

"Statistics available indicate that where such laws exist, particularly in New York and Chicago, they have proved a serious detriment and involved an expense to the contractors for which no adequate service has been rendered. The fundamental idea in the minds of contractors on this subject seems to be that the industry is suffering from the amount of work that is being done by others than those legitimately engaged in the contracting business. While this may be true, it is a serious question whether or not any license legislation will have any tendency whatever to obviate this condition. Such a law was enacted in New York City during 1914 making the National Code a City Ordinance, creating a license board and licensing of contractors. Over five years' experience proves conclusively that there is a larger percentage of irresponsible so called contractors in business in the territory covered by this ordinance than in any other section of the country.

"It has been found impossible to set up any standard of qualification other than a technical one, and while it is to be regretted it is a statement of fact that in many cases the irresponsible man who makes a study of the code with a view to circumventing it, makes a better showing on an examination than the man who is conducting his business in a reputable way. This examination, however, seems to be the only standard available, and all who qualify technically are necessarily granted licenses and are placed on an equal footing.

"This places the responsible contractor, who has an organized business, at a disadvantage, as the purchasing public logically concludes that licenses being granted by legal authority and under a given standard should be certificates of competence in all respects, leaving only the question of the lowest bidder to be considered. The necessary result, in many cases, is that work is given to those totally incapable of performing it properly and rendering the service to which the purchaser is entitled, resulting in dissatisfaction on the part of the purchaser, who logically concludes that there seems to be no reliable standard by which the responsibility of those in the electrical contracting business can be judged.

"These ideas, based on experience and statistics, are given with the hope that

this matter will receive serious consideration by the District Associations and the membership, with a view to formulating some definite policy on this important subject, as if it is ultimately decided that license legislation would be of interest to the majority of the Association membership, some standard should be adopted to bring about conditions which will be as nearly uniform as possible for the purpose of avoiding political control of our industry, which will inevitably occur unless some constructive program is outlined by ourselves."

Sections of the Chicago Ordinance Showing Main Features

Section 1. License required to sell.—That no person, firm or corporation shall engage in the business of disposing of, selling or offering for sale any fixture, fitting, apparatus, appliance or device of any character whatever intended to be used with the City of Chicago for the generation, transmission or utilization of electrical current for light, heat or power purposes unless such person, firm or corporation shall have obtained a license so to do from the City of Chicago; provided, however, that electricians licensed under the ordinances of the City of Chicago for the installation of wires and apparatus for light, heat and power purposes and disposing of or selling only such fixtures, fittings, apparatus, appliances or devices as are installed by them under the authority of permits issued by the Commissioner of Gas and Electricity shall be exempt from the requirements of this section.

Section 2. Approved of materials and devices. No person, firm or corporation shall install, use, dispose of, sell or offer for sale any electrical fixture, fitting, apparatus, appliance or device of any character whatever intended to be used within the City of Chicago for the generation, transmission or utilization of electrical current for light, heat or power purposes unless the same shall have been first approved by the Commissioner of Gas and Electricity.

Section 3. Licenses—Applications—Fees. Any person, firm or corporation desiring to engage in the business of disposing of, selling or offering for sale any electrical device of the type described in Section 1 hereof, shall make application so to do to the Commissioner of Gas and Electricity on a form approved by him. Such application shall contain the business name and

business address of such person, firm or corporation and such other information as the Commissioner of Gas and Electricity shall require, and shall also contain an agreement made by the applicant to dispose of, sell or offer for sale for use in the City of Chicago only such materials or devices described in Section 1 hereof as have been approved by the Commissioner of Gas and Electricity. Upon filling such application in proper form and upon the deposit of the license fee of Fifty dollars (\$50.00), to the Commissioner of Gas and Electricity shall issue to the applicant a license permitting him to dispose of or sell such materials or devices for a period of one (1) year from the date of the issuance of said license. Said license may be renewed for an annual fee of Fifty dollars (\$50.00) and shall not be transferable.

Section 4. Licenses—Number required.—Where a person, firm or corporation shall engage in the business described in Section 1 herein, at more than one location or place of business, a separate license shall be obtained for each such location or place of business.

Section 5. Revocation of license. The Mayor may revoke the license of any licensed electrical dealer for the violation of this or any ordinance of the City of Chicago relating to the disposal or sale of electrical materials or devices of the class mentioned in Section 1 of this ordinance, or if in his discretion the holder of such license is incompetent or unfit.

Proposed Changes in City Ordinances, Buffalo, N. Y.

Electrical work as described herein will be taken to mean all electrical wiring and appliances for furnishing or wiring heat, light and power.

All electrical work must conform to the rules of the National Electric Code which are made a part of the building laws of the City of Buffalo.

No electrical work shall be installed, changed or added to without a permit from the Bureau of Building.

Permits will be issued upon request upon payment of fee of (amount).

Permits will be issued quaduplicate as follows:

One copy to person applying for same.

One copy to owner or occupant of property.

One copy to Underwriters Association of Buffalo.

One copy for official records.

Requests for permits must state name and address of occupant of property, name and address of applicant for permits, general nature of work to be done and that the work will be done under competent supervision and in accordance with rules of National Electrical Code.

Permits will state name and address of occupant of property, name and address of applicant for permit, general nature of work to be done and that the work must conform to the rules of the National Electrical Code.

Note: This serves to have work done properly; does away with dual inspections; makes it public and possible to find out who does work in electrical industry.

Progress in Indiana

Secretary of State Association Has a Dream of the Pipe Variety

The Hoosier State Association of Electrical Contractors and Dealers has adopted the slogan "We Can If We Will—500 Memberships." A. I. Clifford of Indianapolis, secretary-treasurer of the organization, is endeavoring to live up to his slogan, and is doing things accordingly.

Mr. Clifford issues a monthly letter to his membership, and in order to get the fullest coöperation therein, he asks members to send in news items and notes of interest to the trade. In a recent monthly letter, after quoting the very few items which had been sent to him, he said that he would try to dream what the other members might have written. He then completed his three page letter with alleged quotations from the entire membership.

According to the dream, some of the members wrote to their secretary: "Hope all members are as busy as I am"; "Just closed a \$2,000,000 contract"; "Hope to send you eight applications tomorrow"; "Prosperous times here"; "Having weekly pep meetings"; "Wonderful business"; "Send more application blanks"; "Our entire firm talking Association at every opportunity"; Endeavoring to enlarge local association."

These are but a few condensed quotations, and all of the other dream items were fairly reeking with good fellowship, optimism and the true spirit of coöperation. That the clever ruse brought encouraging results evidenced by the first paragraph of the following letter issued by Secretary Clifford:

"I thank you fellows for your re-

sponse to my 'Dream Letter.' Business activities are picking up each day and I hope to hear from more of you next month.

"Your secretary is indeed glad of the opportunity to report that we had a wonderful meeting in Terre Haute on April 6 at a Good Fellowship gathering called to interest the Terre Haute boys in our good work. The fellows in Terre Haute are surely Johnny-on-the-spot when it comes to royal entertaining. Laurence W. Davis, special representative of the National Association, Thos. F. Hatfield and your secretary were certainly royally received and entertained.

"Good talks were made by E. M. Walker, general manager of the Terre Haute Division of the T. H. I. & E. Traction Company, Thos. F. Hatfield and of course Laurence W. Davis. Ten of the contractor-dealers signed applications and these ten will get the balance of the fellows in their city. It was a great day for the Indiana State Association, and we feel sure that the boys there are going to be a great bunch of boosters.

"The Indiana State Association again scored this week, when Alfred Martin of South Bend accepted the invitation extended to him by the National Association to be one of the speakers at the National Anniversary meeting which takes place in Buffalo, New York, on July 20, 21 and 22. Let us begin now to plan for the Buffalo meeting and be on hand to give Mr. Martin the welcome the old Hoosier state has the reputation of giving.

"Gary reports \$400,000 building permits for the month of March.

"Lighthouse Electric Co., Gary, has secured the contract for the Gary Country Club.

"W. R. Cooper, Connorsville, has moved into new quarters at 700-706 Eastern Avenue. Mr. Cooper has secured the rewiring of their former location which will be used as a printing establishment.

"Light Right Electric Co., Evansville, has changed its name and location. It is now: W. E. Krause, 804 Grand Ave.

"The Indianapolis members enjoyed a round table discussion of code questions, led by W. H. Moore of the Inspection Bureau on April 7.

"The labor situation is clearing up nicely in most parts of the state. With the settlement of this matter, building will begin in earnest.

"Again, may I suggest that you begin now to plan to attend the National Convention at Buffalo?"

Kansas City Electric Show

Big Crowds in Attendance All Week and Public Pleased With Exhibits

The electric show which took place at Kansas City during the week of April 18-23, is reported to have been a great success. The public attended by the thousands, every day and night, and learned more about electricity in a week than could otherwise be learned in a year.

The Electric Club was sponsor for the exposition and it is now thought that due to its great success this year, the show will become an annual event. There were more than a hundred exhibitors, including everything electrical, from a plug to a fully equipped radio outfit.

The daily newspapers of Kansas City did themselves proud in press announcements, and in turn they were extensively patronized by local advertisers, who set forth the merits of their electric products in every issue.

The Kansas City Star published a long interview with A. Penn Denton of the Denton Engineering and Construction Company, a progressive electrical concern of that city. Mr. Denton is a member of the National Executive Committee and is very active in organization work. The Times says, in part:

A. Penn Denton believes that, in electrical development, an industrial expansion on greater proportions than ever is to be expected for Kansas City and its surrounding territory.

Fourteen years ago Mr. Denton, an electrical engineer, left the General Electric Company to study more closely conditions in this territory. The rapid development even over obstacles proved the wisdom of his view.

At that time only five or six Kansas towns had electric light plants. The plants were small and of 6-hour service. Kansas City had street cars and lights. That was the electrical extent of the territory.

Electric power was slow in developing in and around Kansas City. Equipments depreciated, fuel costs mounted and an actual yoke was put on industries then here and a warning sounded to industries looking toward the city.

Only about seven years ago did electrical development start. The Kansas Gas and Electric began stringing wires out of Wichita to link towns with a central station. From Concordia and Abilene other towns were switched into central stations there, and 24-hour current was served.

Here at home, development was retarded. The light company had no plant of its own and the railways plant didn't admit of heavier loads. Factories couldn't change to electricity to utilize the many appliances other cities were offered. But in the face of that an expansion of industry was noted.

Meanwhile centers of Kansas, supplied from central stations, utilized current for power as well as light. In Kansas City domestic consumption of power was not so limited as industrial extension, so the vacuum cleaner, electric iron and a few smaller appliances were added.

Now with the yoke removed an industrial expansion greater than either of the last two decades is to be expected, Mr. Denton believes. The central station here, already carrying the city's full load for the first time, has reached out to serve towns, some of them fifty miles away. A new unit, bought and soon to be installed, will keep the supply ahead of the demand, a demand that already has asserted itself in electrification of virtually every flour mill and manufactory in the city.

With the added unit the local company can and will reach out through Eastern Kansas and Western Missouri, offering cheap power and continuous service to communities heretofore dependent on small plants of uncertain capacity and higher rate.

Book on Home Electric

The California Electrical Coöperative Campaign is at present compiling what will be known as the "Electrical Home Scrap Book."

This publication is for the purpose of satisfying the demand for information on the general subject of the electrical homes which have been exhibited in the state of California, in order to educate the public to a universal use of the many convenient labor saving electric appliances, together with the proper wiring of homes, that these devices may fully serve their purpose in adding generally to home comforts.

It is planned to show interiors and exteriors of the five electrical homes thus far exhibited in the state, and also to clearly outline the plan upon which this activity was based. There will further be shown reproductions of display advertising appearing in the various publications throughout California during the period that these homes were on exhibition.

This publication is at present on the

press and it is the intention to distribute the issue post paid at \$1.50 per copy.

Here is an opportunity to members who wish to avail themselves of securing full information on the entire electrical home subject. The campaign is committed to the publication of 500 copies of the first issue, and already there have been received orders for considerably over 300 copies. Those interested should order at once.

Electrically Heated

T. D. MacMallon, secretary of the Majestic Electric Development Company of San Francisco, sends in the following clipping from the Oakland, California, daily Press:

An electric apartment house in fact is the Merritt-Grand apartments, under construction for Mrs. G. J. Mooney at 359 Grand avenue, by the California Builders' Company.

The Berkeley Electric Company, 2142 Center street, Berkeley, is doing the wiring in the building.

The house is complete in its wiring. Instead of a furnace, the apartment is heated by electricity. There are outlets for electric stove, electric washer, percolator, ironer, lights, water heaters and all other necessary appliances.

The builders point out the following features:

The first electrically heated apartment in the city; the electric water heaters, that heat water instantaneously; the convenience outlets that save both fire and accident risk, also eliminating the great inconvenience of the lamp cord; the indirect lighting also is a pleasing feature.

Cost Accountants

Arrangements are being made for a special train to leave New York at two o'clock on the afternoon of Tuesday, September 13, bearing eastern members of the National Association of Cost Accountants to the annual convention to be held at Cleveland, Ohio, from September 14 to 16, according to an announcement just made by Charles R. Rauth, director in charge of meetings.

The membership of the association is made up of approximately 2,500 cost accountants and business executives representing practically every line of industry in the United States, and also includes members in Canada, China, Austria, England, Mexico, France, Costa Rica, Cuba, Chile, the British West Indies and other foreign countries.

Some Ways to Kill an Association

BY WILSON COMPTON

Secretary of National Lumber Manufacturers' Association Presents Revised Rules

1. Don't come to the meeting.
2. But if you do come, come late.
3. If the weather doesn't suit you, don't think of coming.
4. If you do attend a meeting, find fault with the work of the officers and other members.
5. Never accept an office, as it is easier to criticise than to do things.
6. Nevertheless, get sore if you are not appointed on a committee; but if you are, do not attend committee meetings.
7. If asked by the chairman to give your opinion regarding some important matter, tell him you have nothing to say. After the meeting tell everyone how things ought to be done.
8. Do nothing more than is absolutely necessary; but when other members roll up their sleeves and willingly, unselfishly use their ability to help matters along, howl that the association is run by a clique.
9. Hold back your dues as long as possible or don't pay at all.
10. Don't bother about getting new members. Let the Secretary do it.
11. When a banquet is given, tell everybody money is being wasted on blowouts which make a big noise and accomplish nothing.
12. When no banquets are given say the association is dead and needs a can tied to it.
13. Don't ask for a banquet ticket until all are sold.
14. Then swear you've been cheated out of yours.
15. If you do get a ticket, don't pay for it.
16. If asked to sit at the speaker's table, modestly refuse.
17. If you are not asked, resign from the association.
18. If you don't receive a bill for your dues, don't pay.
19. If you receive a bill after you've paid, resign from the association.
20. Don't tell the association how it can help you; but if it doesn't help you, resign.
21. If you receive service without joining, don't think of joining.
22. If the association doesn't correct abuses in your neighbor's business, howl that nothing is done.

23. If it calls attention to abuses in your own, resign from the association.

24. Keep your eyes open for something wrong and when you find it, resign.

25. At every opportunity threaten to resign and then get your friends to resign.

26. When you attend a meeting, vote to do something and then go home and do the opposite.

27. Agree to everything said at the meeting and disagree with it outside.

28. When asked for information, don't give it.

29. Cuss the association for the incompleteness of its information.

30. Get all the association gives you but don't give it anything.

31. Talk coöperation for the other fellow with you; but never coöperate with him.

32. When everything else fails, cuss the Secretary.

Some Thoughts on the Labor Question

BY G. M. SANBORN

Member of the Labor Committee of the National Association of Electrical Contractors and Dealers

For many years the National Association of Electrical Contractors and Dealers pursued the policy of "hands off" of the labor question on the theory that a part of its members were Open Shop Contractors and another part Closed Shop Contractors, and that the labor question was a local one, to be handled locally, and for these reasons the National Association should take no interest in—and not even discuss—the labor question.

I believe the membership of the National have abandoned this idea and are ready to face the labor problem in the same courageous way that they face all of their other business problems.

It is stated that 40 to 60 percent of the cost of every job is labor. Starting with this fact, I do not think we can say that we have no labor problem, any more than we can say that we have no material problem, or an inspection problem, or anything else that may come into our business. No matter how distasteful the problem may be, we certainly have it, and in the building industry we have an organized labor problem.

There seems to me to be no reason why the National Association should not deal with organized labor for the

benefit of such members as employ organized labor, just as it deals with the merchandising problem for the benefit of those who are interested in that phase of the business.

I think that great care should be exercised by the officers and committees of the National to in no way involve with organized labor those contractors of our organization who do not wish to be committed to organized labor, and any money spent on this work should be from a separate fund subscribed by the members employing organized labor and a strict accounting of this fund made in the annual reports of the National.

The Council of Industrial Relations is a comparatively new organization with somewhat of a new ideal; therefore, a word on this subject might be of interest.

This organization is composed of five electrical contractors representing the National Association of Electrical Contractors and Dealers, and five representatives of the International Brotherhood of Electrical Workers. The purpose of the Council is to make studies of industrial conditions and report on the same to the members of the National Association and the International Brotherhood of Electrical Workers, through bulletins issued by the Council, and by a free discussion and mutual understanding of one another's problems and difficulties, to remove, so far as possible, the causes which create dissension, strikes, and lockouts, and further, to provide a clearly defined and definite method of settling all industrial disputes without interruption of work in the building industry.

I believe that both the employers and workers engaged in the building industry have reached the time when they are willing to try some plan of settling these industrial disputes without strikes and lockouts, with the enormous loss and waste incident thereto. The Council of Industrial relations for the Electric Construction Industry offers such a plan. The program and principles of the Council is broad and comprehensive and forms the basis of a platform on which all in the building industry can unite.

This Council has been organized only about a year, and in this short time has accomplished a great deal which has been of great benefit to the industry; this in spite of the fact that the purposes and objects for which the Council was formed have not been generally under-

stood either by the employers or employees.

Recent reports from the treasury department at Washington emphasize the fact that we are spending 93 percent of our taxes for war purposes—past and present; that it requires only 7 percent of the taxes to administer and maintain all other functions of the Government. I wonder if figures somewhat similar might be compiled in the building industry? I think it is safe to say that employers and employees are spending large sums in operating defensive and offensive organizations, and the question naturally arises: If the same money and effort would not be better spent in a serious effort directed towards the elimination of these very costly industrial disturbances?

I say: That the National Association of Electrical Contractors and Dealers has a labor problem; and I hope to hear a free discussion of the subject through the press and at the Conventions.

The Council of Industrial Relations has published a booklet outlining its origin, function and purpose, and it can be had by addressing the General Manager of the National Association of Electrical Contractors and Dealers.

I hope all members of the National, and in fact all contractors, will concern themselves in this labor question.

Librarian Wants It

Word has been received from Yale O. Millington, acting chief of the periodical division of the Library of Congress, Washington, D. C., that one issue of the National Electrical Contractor is missing from the government archives, where all the good literature is preserved for the use of future generations.

The number which has been lost, strayed, or stolen is that of February, 1918, in which a full account of the reorganization of the National Association is presented. Not a copy of this issue can be found at Headquarters, and doubtless the wheels of government will cease to revolve unless some patriotic subscriber will come to the rescue and supply us with the missing number.

Surely no reader would wish to deprive the Librarian of Congress the satisfaction of possessing a complete file of this Great Moral Pendulum, however much he may prize the issue sought. So please look through your back numbers and forward a copy of February, 1918, to this office, whereupon it will be officially sent to Washington to fill an aching void.

Cost Book Lore

About 350 books on the subject of costs in all industries are listed in a Bibliography of Cost Books just issued by the National Association of Cost Accountants, 130 W. 32d street, New York City. The list, which is probably the most complete bibliography on the subject extant, was compiled after an extensive study of the published literature, and while it does not attempt to go beyond the field of books, it is undoubtedly the most useful contribution to the field of cost accounting which has recently been published.

Electrical Engineer Assistant to Secretary Hoover

F. M. Feiker, one of the vice presidents of the McGraw-Hill Company of New York City and chairman of the editorial board of that organization, has been appointed assistant to Secretary of Commerce Hoover at Washington, D. C.

Mr. Feiker is an electrical engineer by profession, and was formerly associated with the A. W. Shaw publications of Chicago. He will assist Mr. Hoover in government research work as it applies to industry.

News Notes Concerning Electrical Contractor-Dealers

Business Changes, Store Improvements, and New Establishments Opened

Thomas-Dickerson Electric Company is reported to have opened a new supply store at Elyria, Ohio. Inc. Cap. \$15,000. Incorporators, H. Thomas and others.

City Electric Company has opened a new store at 302 West Broad Street, Hazelton, Pa.

H. M. & E. Electric Company has purchased the electric department of the Wabash Water & Light Company, Wabash, Ind., and will continue to conduct same.

Chas. A. Wipf will open a new store, carrying electric goods, at the Royal Theatre Building, Fifth and Delaware Streets, New Castle, Delaware.

Modern Appliance Company is opening an electric appliance business at 42 North Pennsylvania Avenue, Indianapolis, Ind.

Pledger Electric Company will open an electric supply store at 12804 Superior Street, Cleveland, Ohio.

A. P. Rasmussen has opened a new

store carrying electric supplies at Merrill, Wisconsin.

The Davis Electric Company is reported to have opened a new business at 40 Eleventh Street, Wheeling, West Va.

Daniel W. Sterner will open an electric supply store at East Main Street, Bloomsburg, Pa.

McCleary & Carpenter have opened a new electric supply store at 89 North Third Street, Columbus, Ohio.

Clarke-Craven Electric Company, electric dealers and contractors, will open a new store at 1221 Wisconsin Avenue, N. W., Washington, D. C.

Gainaday Electric Company has opened a supply store at 303 Delaware Avenue, Wilmington, Del. The proprietors are Messrs. Poole, Mills & Spalding, Inc.

Waterbury Electrical Company, at present located at 262 North Main Street, Waterbury, Conn., will move to their new store carrying electrical supplies at 187 North Main Street.

M. & W. Rochow are opening a new electrical supply business at 57 West 25th Street, New York City.

John Werner has opened an electrical supply store at North and Market Streets, Lykens, Pa.

O. L. Moulton is reported to have opened an electrical supply business at 1814 Carey Avenue, Cheyenne, Wyoming.

Household Electric Company is opening a new electric appliance store at 904 Houston Street, Ft. Worth, Texas.

The Electric Company of which E. A. Daniels, Paul Jones, O. R. Clark and C. E. Beler are proprietors, will open a new store carrying electric appliances at 206 East Choctaw Street, McAlester, Okla.

Richard Bros., electrical contractors, are opening an electrical supply store at Lansford, Pa.

P. T. Collingsworth is reported to have opened a new electrical supply business at Middlesboro, Ky.

Weckermeyer Electric Company has opened a new store carrying electric appliances at 626 Missouri Avenue, East St. Louis, Mo.

Robert Sewell is opening an electric appliance store at Waxahatchie, Tex.

Marine & Anderson have opened an electric appliance business at Princeton, Illinois.

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El Paso Electrical Company will open a new appliance store at 208 Pikes Peak Avenue, Colorado Springs, Colo.

Good Housekeeping Shop has opened a new business carrying electrical supplies at 248 Mass Avenue, Indianapolis, Ind.

Greenwood & Davis are reported to have opened an electrical supply store at 863 Central Avenue, Hamilton, Ohio.

Electric Equipment Company is opening a new appliance store at 22 West Fifth Street, Tulsa, Okla.

North Electric Company of which W. D. Keller is manager, has opened a new business carrying electric appliances at Quincy, Ill.

Davenport Electric Company is reported to have opened a new supply store at Davenport, Ia. Incorporated capital \$20,000. Incorporators, H. M. Heysinger and others.

Peerless Light Company has opened an electric appliance store at Columbus, Kansas.

Floyd & Griffey will open an electric supply store at Shelbyville, Ind.

The 1900 Electric Shop of which Schultz & Lawrence are proprietors, will open a new store carrying electric supplies at East Superior Street, Alma, Michigan.

Emerson & Hudson are opening an electric supply business at Portland, Ind.

J. W. Scott Electric Company has opened a new supply store at 140 West 3rd Street, Cincinnati, Ohio.

K. C. Electric Company is reported to have opened a new electric appliance store at 3226 Trost Avenue, Kansas City, Mo.

Modern Household Appliance Company is opening a new store at 215 East Douglas Street, Wichita, Kansas.

Central Electric Company of which Wright & Kilnowitz are proprietors, has opened a supply store at 1402 Franklin Street, Michigan City, Ind.

Electric Service Stores will open another electric supply store at Knoxville, Tenn. Plan chain of stores. Incorporated capital \$100,000. Incorporators, J. V. Rader and others.

Storud-Michael Company is opening a new store carrying electric supplies, at Marion, Ohio.

F. L. Van Slyke has opened an electric supply business at Puyallup, Wash.

Joseph Noppert is reported to have opened an electrical supply store at Lawrenceburg, Ind.

George F. Abbott has opened a new business carrying electrical supplies, at Front and Gay Streets, Columbus, Ohio.

Merkel Stockman Company is opening an electric supply store at Marshfield, Wisconsin.

William J. Murray has opened an electrical contracting business at Keene, N. H.

Prescott Electric Company of which George Adam and Al Schneiderbair are proprietors, has opened a new store carrying electric supplies, at Prescott, Wisconsin.

Electricity in Brazil

There are only a few people in the United States who realize that electricity is now being extensively employed in all parts of the world. We boast of our use of it for commercial purposes; we enjoy the comforts it affords for lighting and heating; and we wonder why it is not universally adopted.

So far as concerns the capital of Brazil, that great country to the Southeast of us, we have nothing to brag of when it comes to electric lighting. D. Guido Vernaci of Rio de Janeiro, who has been making a business visit to the United States, recently said that after visiting the principal cities of this country, as well as many foreign countries, he believes his home city far excels all others in street lighting. If anything, one is likely to believe that Rio de Janeiro is too well lighted.

As to the use of electricity for other purposes, Mr. Vernaci says that the public does not appreciate its advantages, because educational advertising is lacking. This applies also to the entire South American Continent, outside of the larger cities. But he believes that in time there will be a general adoption of electrical appliances and devices for all purposes. However, individuals are slow to take up any innovation, and it is only through state or municipal uses that electricity is being introduced.

He regrets that there is not some way to reach the people in mass, so as to educate them to the uses of electricity. Then, he says, there would be some chance of promoting large interests along these lines, including the development of water power, which South America possesses in abundance, but

which is very little employed for creating electrical energy.

Mr. Vernaci attended the recent conference of the International General Electric Company, as he represents that company in Brazil. Another attendant at the conference was H. A. Tinson, a representative from Johannesburg, South Africa. Both of these gentlemen believe that an immense export business can be done by the United States manufacturers of electrical goods in their respective countries; but heretofore this business has been handled by England, Belgium, and Germany; since the war, all three of those countries have been striving to recover their lost patronage; however, our own exports on electrical goods are steadily increasing.

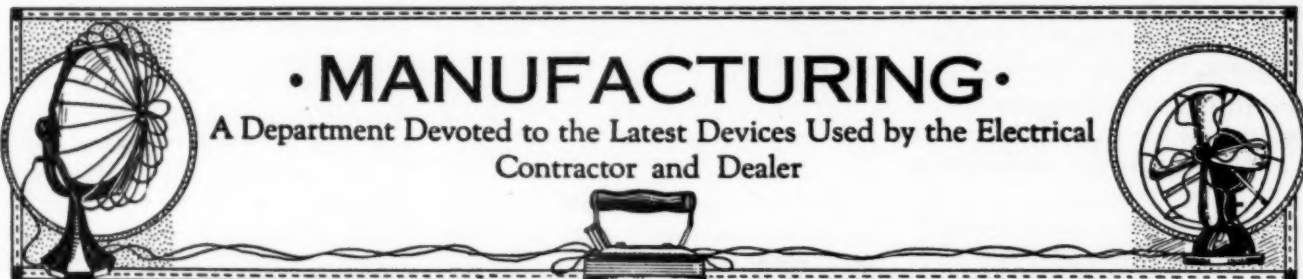
Trade Notes

W. H. Harrington, formerly assistant chief engineer of the New Departure Manufacturing Company, Bristol, Conn., has been appointed electrical engineer of the Arrow Electric Company, Hartford, Conn. Mr. Harrington began his new duties May 1. The New York sales office of the Arrow Company has removed to 350 Madison Avenue.

The Electric Service Supplies Company, Philadelphia, will act as exclusive selling agent for the Peerless Equipment Company of Hanover, Pa., manufacturers of Peerless Armature Repair Machinery and Segur Coil Winding Tools. Heretofore Peerless armature tools were manufactured by the Manley Manufacturing Company, York, Pa., and Segur Coil Winding Tools were manufactured by the Electrical Manufacturers Equipment Company, Chicago.

The Diamond Electric Specialties Corporation of Newark, N. J., report that their Chicago office removed on May 4 to 43-45 South Wells Street. This change is made necessary by the need for much larger space to take care of an increasing Western business and to permit carrying a greatly enlarged stock of Diamond flashlights and batteries.

"Control Apparatus" is the subject of Descriptive Leaflet 3982, just being distributed by the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. Type F magnetic-switch double-section control panels are featured, together with Type 22-F magnetic-switch control panels. Nine diagrams, and dimension diagrams of apparatus are listed.



Universal Electric Range

Landers, Frary & Clark, New Britain, Conn., announce that the Universal Electric Range is ready for the market.

It has been designed with the idea in mind of incorporating in a single stove the various selling features usually found only in a wide variety of num-



bers and types which means curtailed wareroom and selling expense. The Universal Range is strong, attractive and requires little space.

By the comparative efficiency, economy and dependability of heating units, values of electric ranges are greatly gauged. The Universal element has longest life and is speedier than any other enclosed type.

Further description of the Universal Range can be found on a special folder just issued by the manufacturers.

In order that Universal dealers may have the necessary capital to finance business of this character the company has made an arrangement with the Commercial Investment Trust of 347 Madison Avenue, New York, N. Y.,

whereby all dealers who can submit to them satisfactory credit references will be enabled to finance, without drawing on their own capital, their sales of Universal Electric Clothes Washers with deferred payments running over a period of twelve months.

In seeking a plan pains were taken to work something out that would be as simple as possible and require the minimum amount of clerical work on the part of the dealer. In brief the Universal Deferred Payment Sales Plan enables the dealer to sell Universal Electric Clothes Washers to his customers—taking in payment \$15 cash and executing a time payment contract under which the purchaser agrees to pay, in addition to the initial cash payment, twelve monthly installments of \$14.50 each.

This contract is forwarded with the dealer's assignment to the Commercial Investment Trust who immediately remits to the dealer through his source of supply an amount which together with the initial cash payment collected by dealer is sufficient to cover the cost to him, of the machine and allow immediately, nearly one-half his profit in the transaction.

New Appleton Devices

The Appleton Electric Company, Chicago, recently brought out a line of Outlet Box Covers equipped with swivel fixture joints or hubs, for either $\frac{3}{8}$ " or $\frac{1}{2}$ " conduit; also a Unilet swivel fixture joint and a combination hickey and swivel fixture joint.

Figures No. 1 and No. 2 are raised covers showing the swivel fixture joint



Figure No. 1

or hub and can be furnished for 3" round or octagonal boxes, and 4" round or octagonal boxes. Square covers can also be furnished for 4" square boxes. Swivel fixture joint allows the reflector to hang in correct position at all times, even though the Outlet box be installed

at a slight angle and naturally will make for better lighting.

These covers are far superior to those formerly used and which had sta-



Figure No. 2

tionary hubs. The flexibility of this fixture joint or hub prevents breaking of fixture at point of suspension, and fixture will always hang plumb even though it may be jarred through accident. This swivel fixture joint or hub also allows for fixture to swing through an angle of approximately 15 degrees from the perpendicular, on the one style and approximately 45 degrees on the other style. Covers can be furnished in black enamel and galvanized finishes.

Figure No. 3 is a Unilet swivel fixture joint designed for supporting suspended type fixture and when used in conjunction with Unilets this fixture joint supports the fixture and the Unilet provides a separate wiring chamber for the connection.

The use of the Unilet Swivel Fixture Joint insures perfect alignment of the



Figure No. 3



Figure No. 4

reflectors and although the fitting may be mounted on an uneven surface, fixture will always hang plumb. When used where there are numerous fixtures in a row, this fitting will add greatly to the appearance of the installation and make for greater efficiency in the lighting.

The flexibility of this fixture joint prevents breaking of the fixture at point of suspension and fixture will hang correctly even though it may be jarred through accident in cleaning the reflector or striking it in any manner with a step ladder or other object. Wires are not exposed as they pass through the

fixture joint. Fixture joint allows for fixture to swing through an angle of approximately 15 degrees from the perpendicular.

Figure No. 4 shows the combination hickey and swivel fixture joint which is similar in design to Unilet swivel fixture joint. In addition to the swivel fixture joint feature, it also has an added feature of being a hickey.

New Kwikon "No-Bolt" Fixture Stud

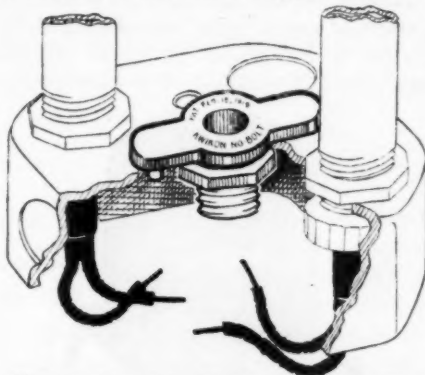
The New Kwikon "No-Bolt" Fixture Stud that has just been placed on the market by S. R. Fralick & Company, 15 S. Clinton Street, Chicago, is perhaps the most practical wiring device that has been developed in recent years. It offers so many advantages over all other types that it will no doubt supplant them in the very near future.

As many contractors will testify, most of the studs in use today are makeshifts, converted as simply as possible from the originals made for open work. This is the first stud designed especially for conduit work. It can be installed in less than one-third the time required by other types and at the same time offers a much more secure and substantial fixture support and takes up less room in the box.

As shown by the illustration and the small sketch, this stud is installed without the use of bolts. The method of in-

into the box a great deal more space is left for wiring and any necessary joints. It is also evident that the Kwikon "No-Bolt" stud may be installed in a small fraction of the time required by other types.

An added feature of this stud is that it may also be used to support the out-



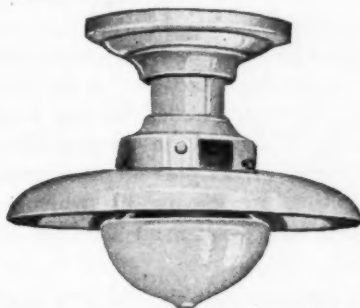
Sketch Showing Method of Installing Kwikon "No-Bolt" Fixture Stud

let box. The center of the shank is open and countersunk at the top which allows a No. 14 wood screw to be run through and fastened to the backing.

Kwikon "No-Bolt" studs may be secured in all standard sizes from your supply jobber. Heavily galvanized to prevent rusting. Packed, as are all Kwikon products, in handy cartons, 5 cartons in a special corrugated container forming the standard package quantity.

Lighting the Kitchen

Every woman who has prepared a meal at the kitchen stove or who has washed dishes at the kitchen sink, knows the annoyance and handicap of standing in her own shadow. She has been forced to do this because the average kitchen light is not only hung too low, but is insufficient in candle power and does not furnish an evenly distributed light throughout the room.



Realizing the need of a good light for the kitchen and scores of other places where a single good unit of not more than 100 watts is required, the Beardslee Chandelier Mfg. Company, Chicago, developed the Baby Denzar. It is made in

two types—the compact ceiling type, for installation at ceiling outlets; and the replacement type, which may be attached directly on any pendent or ceiling fixture which is equipped with a 2 1/4" shade holder. The compact ceiling type is exactly like the regular compact ceiling type Denzar except that, as its name suggests, it is smaller in size.

Both types of Baby Denzar will ac-



commodate either the 75 or 100-watt Mazda C lamp and they make admirable lighting units for kitchens, private game rooms, doctors' and dentists' offices, candy kitchens, butchers' refrigerators, and numerous locations about the modern hotel such as sample rooms, trunk rooms, soda fountains, card rooms, servants' dining rooms, pantries, coffee shops, small bed rooms, hallways, etc.

The accompanying illustrations show the design of both types of Baby Denzar. They are equipped with 12-inch reflecting domes and 6-inch Denzar bowls and are packed in individual cartons.

Box Connector

The Appleton Electric Company of Chicago has purchased all patents, machinery, etc., for manufacturing the box connector for metallic flexible conduit formerly made by Nicholson Electric Fittings Company, Wilkes-Barre, Pa.



These box connectors have several distinguishing features which enable them to be installed quicker and hold tighter than others, and this has been proven by numerous tests. They have a projection on the clamp and side of sleeve which engages in groove of BX Conduit, therefore it cannot slip and is the only connector possessing this feature.

The screw is located in the center of sleeve and when pressure is applied with a screwdriver, the entire connector



New Kwikon "No-Bolt" Fixture Stud, Patented February 18, 1919

stallation is extremely simple and easy. The stud is placed on the back of the outlet box with the threaded shank extending through the center knocknut. The two small pins on either end of the base, register with the bolt holes of the box and prevent turning. A locknut, furnished with each stud is run onto the shank and holds the stud and box firmly together, as if in one piece.

In this way the fixture is supported by the entire box rather than by two small bolts and inasmuch as the threaded shank is the only part that extends

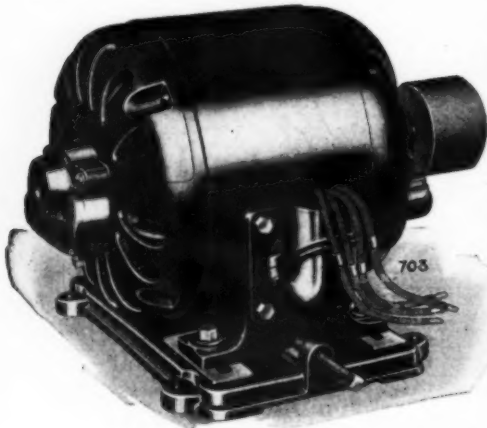
does not loosen nor turn in the box, as is the case with types of connectors where screw is located off center.

These connectors have no screw or nut which may be lost and the end thread of the screw is turned over to safeguard it against loss. Due to this adjustable clamp, it will take a greater range of various sizes and types of conduit than any other on the market.

Repulsion Induction Type Motor

A new single phase motor of the repulsion start, induction type has recently been put into production by The Robbins & Myers Company. This motor is furnished for services which require high starting torque with low starting current.

The motor starts as a repulsion motor. At full speed a centrifugal device operates, short circuiting each commutator bar and lifting the brushes from the commutator, protecting the brushes and commutator from unnecessary wear. The action of this device is positive and does not depend upon the end play of the armature to push the brushes from the commutator.



The interior of the motor is protected by ventilated enclosing end heads, a removable cover being provided on the commutator end for inspection of the commutator and brushes. The end head at the commutator end is marked for the three positions of the brush rocker arm which give clockwise and counterclockwise rotation and neutral.

Oil ring lubrication is used. The oil reservoirs are large and fitted with overflow gauge.

By turning the end heads the motors can be adapted for side wall or ceiling mounting. When this is done the brushes of two and six pole motors must be shifted to correspond to the new position of the end heads.

This motor, known as R & M type "R," is at present furnished in 1/2 H. P. size only, but other sizes ranging from 1/4 to 1 H. P. will soon be in regular production.

Electric Ice Cream Freezer

A New Electric Ice Cream Freezer for household use is being manufactured by Walter S. Edmands, 25 Pearl Street, Boston.



The motor is direct connected and located in a separate compartment above the freezer and therefore protected from water and dampness. The bottom of the compartment forms the top of the freezer case to which it is secured by hinges. Opening the cover disengages the drive from the freezer, at the same time cutting off the current. There are therefore, no parts in motion when the case is open. Closing the cover puts the motor and freezer into instant operation automatically.

The freezer is secured in place by special castings in case, which require no clamps or adjusting screws and is consequently readily removed from or replaced in position. The machine is shipped ready to use with ten feet of cable cord and separable attachment plug.

Condensed Notes of Interest to the Trade

"What Duplexalite Offers to the Lighting Fixture Manufacturer" is the title of a new brochure issued by the Duplex Lighting Works of the General Electric Company. Examples of the unusual decorative treatments to which this lighting unit lends itself are fully illustrated.

The Rome Wire Company is sending an announcement to the trade advising that its new Weatherproof Wire Mill is now completed and in operation at their plant at Rome, New York. The company with its more than fifteen acres of floor space will now rank as one of the

largest manufacturers of copper rods, bare and tinned copper wire, stranded cables, rubber covered wires, magnet wires and weatherproof wires in the country.

The Western Electric Company and its exporting subsidiary, the International Western Electric Company, announce important changes in their executive ranks. Frederick Hayes Wilkins, European general manager of the International Company with headquarters in London, has been elected a vice president of his company. Richard Gregory, comptroller of the Western Electric Company, has been made a member of its board of directors. S. Wallace Murkland who has been assistant comptroller of the American Company since 1918 is now general contract sales manager.

Electricity, the motivating force of modern industry, will be shown in all its vast variety of applications at the Pageant of Progress Exposition on Chicago's mammoth municipal pier, July 30 to August 14, when visitors to the exposition will see for the first time a complete history of the development and use of electricity.

The Westinghouse Electric & Manufacturing Company announces the usual four scholarships as a memorial for those in the employ of the company and its subsidiary companies who entered the service during the World War. The scholarships are granted for one year only, but will be continued for the full course, provided the scholar maintains the academic and other standards required by the college or institution in which he elects to pursue his course of study.

All the countries of Europe are preparing to improve their public utilities, according to J. H. Bell, a member of the engineering force of the Western Electric Company who has just returned from a nine months' tour of investigation of the communicating systems of Europe. Mr. Bell visited Great Britain, Norway, Sweden, Denmark, Holland, France, Belgium, Italy and Spain.

Following the general business trend, the New York offices of the Chicago Fuse Manufacturing Company have removed from the crowded downtown section to the more accessible center of the city. Users of "Union" fuses, boxes, cutouts, etc., will find their spacious new offices, located in the Tilden building, 105 West 40th Street, much more convenient.